

# **transactions of the ASME**

SOCIETY RECORDS

ASME ANNUAL AM-5

JANUARY 1980

## **indexes to 1979 publications**

WHERE TO FIND ASME TRANSACTIONS

INDEXES TO ASME PAPERS AND PUBLICATIONS

INDEX TO MECHANICAL ENGINEERING

INDEX TO TRANSACTIONS OF THE ASME

PUBLISHED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Editor, **J. J. JAKLITSCH, JR.**  
 Associate Editor, **HAROLD BREDIN**  
 Staff Editor, **SAMUEL WALTERS**  
 Assistant Editor, **ELIZ. CALVELLI**  
 New Editor, **JOYCE MOSKOWITZ**  
 Contributing Editor, **FRITZ HIRSCHFELD**  
 Copy/Production Editor, **VICKI KOESTLER**  
 Art Editor, **GALINA SAZONOV**  
 Design Consultant, **MARK SNYDER**  
 Transactions Production, **V. HEANEY,**  
**C. MONAHAN,**  
**S. ROBINSON,**  
**L. ROSENFELD, F. WOOTEN**  
 Editorial Production Assistant,  
**BETH DARCHI**

## POLICY BOARD, COMMUNICATIONS

Chairman and Vice President  
**IRWIN BERMAN**

Members-at-Large  
**J. W. LOCKE**  
**J. E. ORTLOFF**  
**M. J. RABINS**  
**W. J. WARREN**

Policy Board Representatives  
 Basic Engineering, **FRED LANDIS**  
 Industry, **R. K. HAMPTON**  
 General Engineering, **A. A. SEIREG**  
 Power, **R. E. REDER**  
 Codes and Standards, **L. L. ELDER**  
 Research, **G. P. COOPER**  
 Computer Tech. Comm, **A. A. SEIREG**  
 Nat'l. Norm. Comm, **S. P. ROGACKI**  
 Managing Director, Publishing,  
**C. O. SANDERSON**

## OFFICERS OF THE ASME

President, **DONALD N. ZWIEP**  
 Exec. Dir. & Secy., **ROGERS B. FINCH**  
 Deputy Executive Dir., **PETER CHIARULLI**  
 Treasurer, **ROBERT A. BENNETT**  
 Vice Presidents, **IRWIN BERMAN,**  
**P. W. BRAISTED,**  
**S. H. CRANDALL,**  
**W. C. FACKLER,**  
**E. V. FISHER,**  
**GEORGE FRIED,**  
**R. B. GAITHER,**  
**J. K. JOHNSON,**  
**J. R. JONES,**  
**R. A. KENYON,**  
**F. F. LING,**  
**J. W. MCKIERNAN,**  
**J. T. POPE,**  
**H. C. REEDER,**  
**ERCOLE ROSA,**  
**RICHARD ROSENBERG,**  
**L. S. SMITH,**  
**C. C. SPACE,**  
**R. P. TROWBRIDGE,**  
**R. I. VACHON,**  
**C. O. VELZY**

Published by The American Society  
 of Mechanical Engineers. The editorial de-  
 partment is located at the headquarters of  
 the Society, 345 East Forty-Seventh Street,  
 New York, N. Y. 10017. Cable address, "Mech-  
 aneer," New York.

## transactions of the ASME

Published by  
 The American Society of  
 Mechanical Engineers

Volume 102  
 JANUARY 1980

# indexes to 1979 publications

### Where You Will Find ASME Transactions

In United States and Territories .....	SR-1
In Other Countries .....	SR-4

### Indexes to ASME Papers and Publications .....

Regular Society Publications, 1979 .....	SR-6
Publications Issued in 1979 .....	SR-6
How to Find Papers Presented at 1979 ASME Meetings .....	SR-6
Currently Available ASME Publications .....	SR-6
Periodicals .....	SR-15
ASME Miscellaneous Papers, 1978 .....	SR-16

### Index to Mechanical Engineering, 1979 .....

### Index to Transactions of the ASME, 1979 .....

SR-161



## Where You Will Find the ASME Transactions

### In United States and Territories

#### ALABAMA

Auburn .....	Auburn University Main Library Library, Dept. of Mech. Engrg.
Birmingham .....	University of Alabama in Birmingham Sterne Library Engrg. Library
Huntsville .....	University of Alabama in Huntsville Main Library
Tuskegee .....	Tuskegee Institute School of Engineering Library
University .....	University of Alabama Engineering Library

#### ARIZONA

Flagstaff .....	Northern Arizona University Library-Acquisitions
Tempe .....	Arizona State University Arizona State University Library Mechanical Engineering Library
Tucson .....	University of Arizona Main Library Mech. Engrg. Dept. Library

#### ARKANSAS

Fayetteville .....	University of Arkansas University Library—Serials Dept.
--------------------	--

#### CALIFORNIA

Berkeley .....	University of California, Berkeley General Library Mechanical Engineering Library
Chico .....	California State University, Chico University Library
Davis .....	University of California, Davis University Library
Fresno .....	California State University, Fresno Student Library—School of Engineering
Fullerton .....	California State University, Fullerton Library/Periodicals Division of Engineering Library, Room E 100
Inglewood .....	Northrop University Alumni Library
Irvine .....	University of California, Irvine General Library—Serials Dept.
Long Beach .....	California State University at Long Beach Univ. Library—Serials Dept. Mechanical Engineering Resource Center
Los Angeles .....	California State University at Los Angeles John F. Kennedy Memorial Library Loyola Marymount University Charles Van der Ahe Library—Periodicals Dept.
Monterey .....	University of California ASME Student Reference Room Library Room 4173 Engineering Bldg. I University of Southern California Engineering Library
Northridge .....	U. S. Naval Postgraduate School Head Library—Code 0212 Mechanical Engineering Library
Pasadena .....	California State University at Northridge Library—Serials Dept.
Pomona .....	California Institute of Technology Millikan Memorial Library
Sacramento .....	California State Polytechnic University, Pomona Library
San Francisco .....	California State University, Sacramento Library Serials Dept.
San Luis Obispo .....	San Francisco State University Main Library
Santa Barbara .....	California State Polytechnic University, San Luis Obispo Library
Santa Clara .....	University of California, Santa Barbara Elect. Engrg. Bldg. Serials Library
San Diego .....	University of Santa Clara Varsi Library
San Jose .....	San Diego State University Library—Serials Department
San Jose .....	San Jose State University Main Library—Serials Dept.

Stanford .....	Stanford University Durand Room—Mechanical Engrg. Dept.
----------------	--

#### COLORADO

Boulder .....	University of Colorado Libraries—Serials Department
Fort Collins .....	Colorado State University Morgan Library
Golden .....	Colorado School of Mines Arthur Lake Library
USAF Academy .....	United States Air Force Academy Academy Library

#### CONNECTICUT

Bridgeport .....	University of Bridgeport Library—Periodicals Dept. Mechanical Engineering Dept. Library
Storrs .....	University of Connecticut Wilbur Cross Library Engineering Library
West Hartford .....	University of Hartford Science Librarian
West Haven .....	University of New Haven Library

#### DELAWARE

Newark .....	University of Delaware Morris Library—Serial Dept. Mech. & Aerospace Engrg. Library—Evans Hall
--------------	--

#### DISTRICT OF COLUMBIA

Washington .....	Catholic University of America Engineering Library George Washington University Library Howard University Engineering and Architectural Library Library of Congress National Bureau of Standards Library U. S. Patent Office Scientific Library
------------------	--

#### FLORIDA

Boca Raton .....	Florida Atlantic University Main Library Mech. Engrg. Dept.—Student Library
Coral Gables .....	University of Miami Main Library—Pe- riodicals Dept.
Gainesville .....	University of Florida Engineering Sciences Library
Melbourne .....	Florida Institute of Technology Mechanical/Electrical Engineering Library
Orlando .....	Univ., Central Florida Mechanical Engrg. & Aerospace Science Library—Serials
Tampa .....	University of South Florida Main Library

#### GEORGIA

Atlanta .....	Georgia Institute of Technology Library
Marietta .....	Southern Technical Institute Technical Library

#### HAWAII

Honolulu .....	University of Hawaii Mechanical Engineering Dept. Library Graduate Research Library
----------------	---

#### IDAHO

Moscow .....	University of Idaho Library—Acquisitions Section Mechanical Engineering Dept. Library
--------------	---

## ILLINOIS

- Chicago ..... Illinois Institute of Technology  
Library—Technology Center  
University of Illinois at Chicago Circle  
ASME Student Library
- Evanston ..... Northwestern University  
Technological Institute Library
- Peoria ..... Bradley University  
Library—Periodicals Department
- Urbana ..... University of Illinois  
Library—Serials Dept.

## INDIANA

- Angola ..... Tri-State University  
Perry T. Ford Memorial Library—Periodicals Dept.
- Evansville ..... University of Evansville  
Clifford Memorial Library  
Engineering Library
- Fort Wayne ..... Indiana-Purdue Univ. at Fort Wayne  
Library Serials
- Hammond ..... Purdue University-Calumet Campus  
Main Library
- Lafayette ..... Purdue University  
Library Spjies Unit
- Notre Dame ..... University of Notre Dame  
Engineering Library
- Terre Haute ..... Rose-Hulman Institute  
Library
- Valparaiso ..... Valparaiso University  
University Library

## IOWA

- Ames ..... Iowa State University  
Science Library
- Iowa City ..... State University of Iowa  
University Library—Serials Acquisition Dept.

## KANSAS

- Lawrence ..... University of Kansas  
Libraries—Serials Department  
Mechanical Engineering Dept. Library
- Manhattan ..... Kansas State University  
Library Serials Dept.
- Wichita ..... Wichita State University  
Mechanical Engineering Dept. Library

## KENTUCKY

- Bowling Green ..... Western Kentucky University  
Ogden College of Sci. & Tech. Science Library  
Mechanical Engineering Tech. Library
- Lexington ..... University of Kentucky  
Engineering Library
- Louisville ..... University of Louisville  
Speed Scientific School Library

## LOUISIANA

- Baton Rouge ..... Louisiana State University  
Librarian  
Southern University  
University Library  
Engineering Library
- Lafayette ..... University of Southwestern Louisiana  
Dupre Library
- New Orleans ..... Tulane University  
Howard Tilton Memorial Library
- Ruston ..... Louisiana Tech University  
Prescott Library

## MAINE

- Orono ..... University of Maine  
Library

## MARYLAND

- Annapolis ..... U. S. Naval Academy  
Library
- College Park ..... University of Maryland  
Engineering and Physical Sciences Library  
Mechanical Engineering Dept. Library

## MASSACHUSETTS

- Amherst ..... University of Massachusetts  
Library—Serials Dept.

- Boston ..... Northeastern University  
Dodge Library  
Mechanical Engineering Dept. Library
- Cambridge ..... Massachusetts Institute of Technology  
Library—Serials and Journals
- Lowell ..... University of Lowell  
Alumni Memorial Library
- Medford ..... Tufts University  
University Library  
Mech. Engrg. Library
- North Dartmouth ..... Southeastern Massachusetts University  
Main Library  
Serial and Periodicals Library
- Springfield ..... Western New England College  
Churchill Library—Ref. Room
- Worcester ..... Worcester Polytechnic Institute  
Gordon Library

## MICHIGAN

- Ann Arbor ..... University of Michigan  
Engineering Library  
University Microfilms—Serials Section
- Dearborn ..... University of Michigan-Dearborn  
Main Campus Library
- Detroit ..... University of Detroit  
Library  
Wayne State University  
Kresge-Hooker Scientific Library
- East Lansing ..... Michigan State University  
Library—Serials Dept.  
Engineering Library
- Flint ..... General Motors Institute  
General Motors Institute Library
- Houghton ..... Michigan Technological University  
Library—Serials Dept.
- Sault Ste. Marie ..... Lake Superior State College  
Main Library  
Dept. of Engineering Technology Library

## MINNESOTA

- Minneapolis ..... University of Minnesota  
Engineering Library  
Design Engineering Library

## MISSISSIPPI

- State College ..... Mississippi State University  
University Library
- University ..... University of Mississippi  
Mechanical Engineering  
Library—CH Bldg.

## MISSOURI

- Columbia ..... University of Missouri  
Engineering Library
- Rolla ..... University of Missouri at Rolla  
Library
- St. Louis ..... Washington University  
Library—Acquisitions Dept.

## MONTANA

- Bozeman ..... Montana State University  
Serial Librarian  
Mech. Engrg. Dept. Library

## NEBRASKA

- Lincoln ..... University of Nebraska-Lincoln  
Library—Acquisitions Dept.

## NEVADA

- Reno ..... University of Nevada  
Engineering Library  
Mechanical Engineering Library

## NEW HAMPSHIRE

- Durham ..... University of New Hampshire  
Main Library
- Hanover ..... Dartmouth College  
Baker Memorial Library

## NEW JERSEY

- Hoboken ..... Stevens Institute of Technology  
Main Library

Newark ..... New Jersey Institute of Technology  
Library  
Piscataway ..... Rutgers, The State University  
Mechanical, Aero & Ind. Dept.  
Princeton ..... Princeton University  
Student Reading Room  
Engineering Library  
Teaneck ..... Fairleigh Dickinson University  
Library

## NEW MEXICO

Albuquerque ..... University of New Mexico  
General Library—Serials Dept.  
Mech. Engrg. Dept. Library  
Las Cruces ..... New Mexico State University  
Library

## NEW YORK

Albany ..... New York State Library  
Bronx ..... State University of New York Maritime College  
Stephen B. Luce Library  
Manhattan College  
Mechanical Engineering Dept. Library  
Brooklyn ..... Polytechnic Institute of New York  
Library  
Pratt Institute  
Library  
Brooklyn Public Library  
Buffalo ..... State University of New York at Buffalo  
Science and Engineering Library  
Ithaca ..... Cornell University  
Engineering Library—Carpenter Hall  
Jamaica, L. I. .... Queens Borough Public Library  
New York ..... City College of New York  
Engineering Library—Steinman Hall  
Mechanical Engrg. Dept. Library  
Columbia University  
Egleston Library  
Cooper Union  
Main Library  
Bateman Library—Mech. Engrg. Dept.  
Engineering Societies Library  
New York Institute of Technology College Library  
Public Library—Science and Technology Div.  
Old Westbury ..... New York Institute of Technology  
Library  
Potsdam ..... Clarkson College of Technology  
Mechanical Engineering Dept. Library  
Rochester ..... University of Rochester  
College of Engineering Library  
Rochester Institute of Technology  
Wallace Memorial Library  
Schenectady ..... Union College  
Library  
Stony Brook ..... State University of New York, Stony Brook  
Engineering Library  
Main Library—Periodicals  
Syracuse ..... Syracuse University  
Carnegie Library  
Troy ..... Rensselaer Polytechnic Institute  
Library Serials Dept.

## NORTH CAROLINA

Charlotte ..... University of North Carolina—Charlotte  
Atkins Library—Serials Department  
Technical Library Reference Room Library  
Public Library  
Durham ..... Duke University  
Library—Periodicals  
Greensboro ..... North Carolina Agricultural & Tech. State Univ.  
Main Library  
Mechanical Engineering Dept. Library  
Raleigh ..... North Carolina State University at Raleigh  
D. H. Hill Library

## NORTH DAKOTA

Fargo ..... North Dakota State University  
Library  
Grand Forks ..... University of North Dakota  
Main Library  
Mechanical Engineering Dept. Library

## OHIO

Ada ..... Ohio Northern Library  
Heterick Library  
Mechanical Engineering Reading Room  
Akron ..... University of Akron  
Mechanical Engineering Dept. Library  
Auburn Science Library

Athens ..... Ohio University  
Mechanical Engrg. Library  
Cincinnati ..... University of Cincinnati  
Library  
Cleveland ..... Case Western Reserve University  
The Sears Library  
Cleveland State University  
Library  
Mechanical Engineering Dept. Library  
Columbus ..... Ohio State University  
Library  
Dayton ..... University of Dayton  
Library—Periodicals Dept.  
Toledo ..... University of Toledo  
Carlson Library  
Youngstown ..... Youngstown State University  
Library Serials Dept.

## OKLAHOMA

Norman ..... University of Oklahoma  
Engineering Library  
Stillwater ..... Oklahoma State University  
Library  
Tulsa ..... University of Tulsa  
McFarlin Library—Serials

## OREGON

Corvallis ..... Oregon State University  
Library—Serials Dept.  
Klamath Falls ..... Oregon Institute of Technology  
Main Library  
Portland ..... University of Portland  
Main Library

## PENNSYLVANIA

Bethlehem ..... Lehigh University  
University Library  
Mechanical Engineering Dept. Library  
Chestnut Hill ..... Spring Garden College  
Main Library  
Chester ..... Widener College  
School of Engineering Library  
Easton ..... Lafayette College  
Skillman Memorial Library  
Erie ..... Gannon College  
Library  
Johnstown ..... University of Pittsburgh at Johnstown  
Main Library  
Lewisburg ..... Bucknell University  
Bertrand Library—Periodicals Dept.  
Mechanical Engineering Dept. Library  
Middletown ..... Pennsylvania State University—Capitol Campus  
Library  
Philadelphia ..... Drexel University  
Attn. Serials Dept.  
Temple University  
Paley Library  
University of Pennsylvania  
Towne Scientific Library  
Pittsburgh ..... Carnegie-Mellon University  
Engineering & Science Library  
Mechanical Engineering Library  
Carnegie Library of Pittsburgh  
Swarthmore ..... Swarthmore College  
College Library  
University Park ..... Pennsylvania State University  
Pattee Library—Serials  
Mechanical Engineering Dept. Library  
Villanova ..... Villanova University  
Main Library  
Mechanical Engineering Dept. Library

## PUERTO RICO

Mayaguez ..... University of Puerto Rico  
General Library  
Mechanical Engineering Library

## RHODE ISLAND

Kingston ..... University of Rhode Island  
Library  
Providence ..... Brown University  
Sciences Library

## SOUTH CAROLINA

Clemson ..... Clemson University  
College Library  
Mech. Engrg. Library

Columbia ..... University of South Carolina  
McKissick Library--Serials  
Mechanical Engr. Dept. Library

## SOUTH DAKOTA

Brookings ..... South Dakota State University  
Library  
Rapid City ..... South Dakota School of Mines and Technology  
J. Taylor Library  
Mech. Engrg. Dept. Library

## TENNESSEE

Cookeville ..... Tennessee Tech University  
Mechanical Engrg. Dept. Library  
J. Whitson Memorial Library  
Knoxville ..... University of Tennessee  
Engineering Library  
Memphis ..... Christian Brothers College  
Library--Periodicals Dept.  
Memphis State University  
John Brister Library--Serials Department  
Nashville ..... Tennessee State University  
Mechanical Engrg. Dept.  
Vanderbilt University  
Joint University Libraries

## TEXAS

Arlington ..... University of Texas at Arlington  
Library--Serials  
Mech. Engrg. Dept. Library  
Austin ..... University of Texas at Austin  
Engineering Library  
Beaumont ..... Lamar University  
Library  
Engineering Library  
College Station ..... Texas A & M University  
Library--Serials Record  
Dallas ..... Southern Methodist University  
Engineering School Library  
El Paso ..... University of Texas at El Paso  
Main Library--Serials Dept.  
Houston ..... University of Houston  
Libraries--Serials  
Mech. Engrg. Dept. Library  
William Marsh Rice University  
Fondren Library  
Kingsville ..... Texas A & I University  
Technical Library--School of Engineering  
James C. Jernigan Library  
Lubbock ..... Texas Tech University  
Mechanical Engineering Dept. Library  
Prairie View ..... Prairie View Agricultural & Mechanical Univ.  
W. R. Banks Library  
Engineering Library

## UTAH

Logan ..... Utah State University  
Dept. of Mechanical Engineering--Library  
9Main  
Library  
Provo ..... Brigham Young University  
Central Library--Serials Section  
Mechanical Engineering Dept. Library  
Salt Lake City ..... University of Utah  
Engineering Library--Serials Order Dept.  
Mechanical Engineering Dept. Library

## VERMONT

Burlington ..... University of Vermont  
Billings Library  
Northfield ..... Norwich University  
Mechanical Engineering Dept. Library

## VIRGINIA

Blacksburg ..... Virginia Polytechnic Institute & State Univ.  
Main Library  
Charlottesville ..... University of Virginia  
Engineering Library--Thornton Hall  
Norfolk ..... Old Dominion College  
Library

## WASHINGTON

Pullman ..... Washington State University  
Science Library--Holland Library

Seattle ..... Seattle University  
Library  
University of Washington  
Engineering Library FH-15  
Mechanical Engineering Library FU-10

## WEST VIRGINIA

Montgomery ..... West Virginia Institute of Technology  
Vining Library  
Mechanical Engr. Library  
Morgantown ..... West Virginia University  
Engineering Library--Evansdale Campus

## WISCONSIN

Madison ..... University of Wisconsin  
College of Engrg. Library  
Milwaukee ..... Marquette University  
Mechanical Engineering Library  
Milwaukee School of Engineering  
Main Library  
University of Wisconsin, Milwaukee  
Main Library

## WYOMING

Laramie ..... University of Wyoming  
Coe Library

## In Other Countries

## ARGENTINA

Buenos Aires ..... Sociedad Cientifica

## AUSTRALIA

Adelaide ..... Public Library of South Australia  
Melbourne ..... State Library of Victoria  
Nedlands ..... University of Western Australia  
Sydney ..... Public Library of New South Wales

## CANADA

British Columbia  
Vancouver ..... University of British Columbia  
Library--Serials Div.  
Ontario  
Hamilton ..... McMaster University  
Physical Science Library  
Kingston ..... Queen's University  
Mechanical Engineering Dept. Library  
Toronto ..... University of Toronto  
Library--Serials Dept.  
Engineering Library  
Waterloo ..... University of Waterloo  
Mechanical Engineering Dept. Library  
Library--Serials Dept.  
Windsor ..... University of Windsor  
The Library  
Mechanical Engr. Dept. Library

## ENGLAND

Birmingham ..... Birmingham Reference Library  
Bristol ..... University of Bristol Library  
Cambridge ..... University of Cambridge  
London ..... Royal Aeronautical Society  
Manchester ..... Manchester College of Science and Technology  
Newcastle Upon  
Tyne ..... North East Coast Institute of Engineers and Shipbuilders

## GERMANY

Berlin-  
Charlottenburg ..... Technische Universität Berlin  
Karlsruhe ..... Universitäts Bibliothek

## HOLLAND

Delft ..... Bibliothek Technische Hogeschool

## NORTHERN IRELAND

Belfast ..... Queen's University Library  
David Keir Branch

## MEXICO

Mexico City ..... Ciudad Universitaria  
Facultad de Ingenieria  
1st Politecnico Nacional Unidad Profesional  
Monterrey ..... Instituto Tecnologico de Monterrey  
Biblioteca  
Depto. de Matematicas

## NEW ZEALAND

Christchurch ..... University of Canterbury

## SCOTLAND

Glasgow ..... Mitchell Library  
Liverpool ..... City of Liverpool Libraries

## SOUTH AFRICA

Cape Town ..... University of Cape Town  
Jagger Library

## TURKEY

Istanbul ..... Bogazici Universitesi

# Index to ASME Papers and Publications Volume 101, 1979

This and the following pages will serve as a guide to the current publications of the ASME.

## PUBLICATIONS ISSUED IN 1979

### Books and Reports

Modern Developments In Composite Materials And Structures  
Proceedings Of 1979 Annual Reliability And Maintainability Symposium  
Recommended Guide For The Prediction Of The Dispersion Of Airborne Effluents - Third Edition  
Finite Element Methods For Convection Dominated Flows - AMD Vol. 34  
Mechanics Applied To The Transport Of Bulk Materials - AMD Vol. 31  
Mechanics Of Biomaterials - AMD Vol. 33  
1979 Biomechanics Symposium - AMD Vol. 32  
Nonlinear And Dynamic Fracture Mechanics - AMD Vol. 35  
Survival Of Mechanical Systems In Transient Environments - AMD Vol. 36  
1979 Advances In Bioengineering  
Advances In Reliability And Stress Analysis  
Theory Of Machines And Mechanisms  
Cavitation And Polyphase Flow Forum - 1979  
Flow In Primary, Non-Rotating Passages In Turbomachines  
International Symposium On Cavitation Inception  
Pump Turbine Schemes: Planning, Design, and Operation  
Turbulent Boundary Layers  
National Historic Mechanical Engineering Landmarks  
Advances In Enhanced Heat Transfer  
Condensation Heat Transfer  
Fluid Flow And Heat Transfer Over Rod Or Tube Bundles  
The Interrelationships Between Codes, Standards, And Customer Specifications For Process Heat Transfer Equipment  
Nonequilibrium Interfacial Transport Processes  
Energy Conservation Through Fluid Film Lubrication Technology: Frontiers In Research And Design  
Fundamentals Of The Design Of Fluid Film Bearings  
Applications Of Materials For Pressure Vessels And Piping - MPC-10  
Cast Metals For Structural And Pressure Containment Application - MPC-11  
Structural Integrity Technology  
Wear Of Materials - 1979  
Deep Ocean Mining - OED - Vol. 7  
1979 Petroleum Mechanical Engineering Conference And Workshop  
ASME Steam Tables-Fourth Edition (With Mollier Chart)  
Dynamics Of Fluid Structure Systems In The Energy Industry - PVP-39  
Elevated Temperature Piping Design - PVP-36  
Finite Element Grid Optimization - PVP-38  
Flow-Induced Vibration  
Inservice Data Reporting And Analysis Volume II - PVP-35  
Lifetime Earthquake Engineering: Buried Pipelines, Seismic Risk, And Instrumentation - PVP-34  
Methods For Predicting Material Life And Fatigue  
Piping Restraint Effects On Piping Integrity - PVP-37  
Safety Relief Valves - PVP-33  
Consensus On Operating Practices For The Control Of Feedwater And Boiler Water Quality In Modern Industrial Boilers  
Research Needs Report: Environmental And Conservation Research  
Research Needs Report: Fundamental Research Needs  
Measurements For Industrial Noise Control  
Thermodynamic Data For Waste Incineration  
Aerodynamics Of Transportation  
Railway Mechanical Engineering - A Century Of Progress - Car And Locomotive Design  
Companies Holding Boiler And Pressure Vessel Certificates Of Authorization For Use Of Code Symbol Stamps 1979 Edition (With Winter 1979 Supplement)

## HOW TO FIND PAPERS PRESENTED AT 1979 ASME MEETINGS

The technical programs of the meetings of the Society and of its Professional Division have been published in MECHANICAL ENGINEERING and may be located by consulting the index on page SR-. Many of these papers will be published in MECHANICAL ENGINEERING or the Transactions and may be located by reference to the indexes of these publications. A free, up-to-date edition of the ASME Technical Papers Catalog is available on request. Xerox copies of out-of-print technical papers may be purchased from the Engineering Societies Library, 345 E. 47th St., New York, NY 10017. Phone (212) 644-7611.

### Special Services

In order to expedite European orders for the ASME Boiler and Pressure Vessel Code and related titles, special arrangements have been made with the British Standards Institution, (T.H.E.) Maylands Avenue, Hemel Hempstead, Herts HP2 4SQ, England, to stock and sell these titles.

SR-6

For the convenience of our customers on the West Coast, special arrangements have been made with Global Engineering Documentation Services, Inc., 3301 W. MacArthur Blvd., Santa Ana, CA 92704, to stock and sell Codes and Standards.

Complete sets of all Codes and Standards are available for sale on microfilm from Information Handling Services, 15 Inverness Way East, Englewood, CO 80150.

Select out-of-print symposia and proceedings and ASME journals may be obtained on microfilm or in xerographic form. Contact Xerox University Microfilms, Books and Collections, 333 North Zeeb Road, Ann Arbor, MI 48106.

## CURRENTLY AVAILABLE ASME PUBLICATIONS

ASME members are usually eligible for a 50% discount on special publications and a 20% discount on Codes and Standards (exceptions are indicated). In all cases, L before a price indicates the list price of the volume, and M indicates member price. All Books may be ordered from the ASME Order Department, 345 E. 47th St., New York, NY 10017. Phone (212) 644-7716.

## AMERICAN NATIONAL STANDARDS

### Elevators, Plumbing and General Standards

- A13.1-1975 Scheme for the Identification of Piping Systems, Book No. L0003, L-\$3.00, M-\$2.40
- A17 Guide Evacuation of Passengers from Stalled Elevator Cars (Not an ANSI Standard), Book No. A00070, L-\$2.25, M-\$1.80
- A.17.1-1978 Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks (with Supplements up to the 1981 Edition) 1978 360 pp., Book No. A0096B (Bound) L-\$30.00, M-\$24.00; Book No. A0096L (Loose-Leaf) L-\$20.00, M-\$24.00; Book No. A00097 (Binder) L-\$5.00, M-\$4.00
- ANSI A17.2-1979 Inspectors' Manual-American National Standard Practice for the Inspection of Elevators, Escalators and Moving Walks (with Supplements up to the 1982 Edition), Book No. A00049 197 pp., L-\$17.00, M-\$13.60; Available from A17.2-1979 in pad form Checklist for Initial Inspection and Test of Electric Elevators, Book No. A049C6, \$12.00 (No Member Discount), Checklist for Initial Inspection and Test of Hydraulic Elevators, Book No. A049C7, \$12.00 (No Member Discount), Checklist for Initial Inspection and Test of Escalators, Book No. A049C8, \$6.00 (No Member Discount), Checklist for Initial Inspection and Test of Moving Walks, Book No. A049C9, \$6.00 (No Member Discount)
- A40.5-1943 Threaded Cast Iron Pipe for Drainage, Vent and Waste Services, Book No. M00022, L-\$2.25, M-\$1.80
- A40.8-1955 National Plumbing Code (Withdrawn by ANSI), Book No. L00010, L-\$6.75, M-\$5.40
- A90.1-1976 Safety Standard for Manlifts, Book No. B00008, L-\$4.50, M-\$3.60
- A112.1.2-1942 (R1979) Air Gaps in Plumbing Systems, Book No. J00041, L-\$2.75, M-\$2.20
- A112.6.1-1972 Supports for Off-the-Floor Plumbing Fixtures for Public Use, Book No. J00043, L-\$3.50, M-\$2.80
- A112.11.1-1973 Drinking-Fountains and Self-Contained Mechanically Refrigerated Drinking-Water Coolers, Book No. J00039, L-\$3.25, M-\$2.60
- A112.14.1-1975 Backwater Valves, Book No. J00035, L-\$3.00, M-\$2.40
- A112.18.1-1975 Finished and Rough Brass Plumbing Fixture Fittings, Book No. J00029, L-\$4.00, M-\$3.20
- A112.19.1 M-1979 Enameled Cast Iron Plumbing Fixtures, Book No. J00011, L-\$5.00, M-\$4.00
- A112.19.2-1973 Vitreous China Plumbing Fixtures, Book No. J00012, L-\$4.50, M-\$3.60
- A112.19.3-1976 Stainless Steel Plumbing Fixtures (Designed for Residential Use), Book No. J00050, L-\$4.50, M-\$3.60
- A112.19.4-1977 Porcelain Enameled Formed Steel Plumbing Fixtures, Book No. J00064, L-\$4.00, M-\$3.00
- A112.19.5-1979 Trim for Water-Closet Bowls, Tanks, and Urinals, Book No. J00058, L-\$4.50, M-\$3.60
- A112.21.1-1968 (R1974) Floor Drains, Book No. J00040, L-\$3.50, M-\$2.80
- A112.21.2-1971 Roof Drains, Book No. J00002, L-\$2.75, M-\$2.20
- A112.21.3-1976 Hydrants for Utility and Maintenance Use, Book No. J00051, L-\$4.00, M-\$3.20
- A112.26.1-1969 (R1975) Water Hammer Arresters, Book No. K00020, L-\$4.00, M-\$3.20
- A112.36.2-1975 Metallic Cleanouts, Book No. J00045, L-\$3.00, M-\$2.40

### Threads & Limits and Fits

- B1.1-1974 Unified Inch Screw Threads (UN and UNR Thread Form), Book No. M00028, L-\$15.00, M-\$12.00
- B1.2-1974 Gages and Gaging for Unified Inch Screw Threads, Book No. N00058, L-\$11.00, M-\$8.80
- B1.3-1979 Screw Thread Gaging Systems for Dimensional Acceptability, Book No. N0091, L-\$4.00, M-\$3.20
- B1.5-1977 Acme Screw Threads, Book No. N00027, L-\$10.00, M-\$8.00
- B1.7-1977 Nomenclature Definitions and Letter Symbols for Screw Threads Book No. L00011, L-\$4.50, M-\$3.60
- B1.8-1977 Stub Acme Screw Threads, Book No. N00028, L-\$7.50, M-\$6.00

SOCIETY RECORDS



- B1.9-1973 (R1979) Buttress Inch Screw Threads 7°/45° Form With 0.6 Pitch Basic Height of Thread Engagement, Book No. N00029, L-\$5.00, M-\$4.00.  
 B1.10-1958 Unified Miniature Screw Threads, Book No. N00025, L-\$3.00, M-\$2.40.  
 B1.11-1958 (R1978) Microscope Objective Thread, Book No. N00020, L-\$2.25, M-\$1.80.  
 B1.12-1972 Class 5 Interference-Fit Thread, Book No. N00032, L-\$2.75, M-\$2.20.  
 B1.13M-1979 Metric Screw Threads—M Profile, Book No. N00046, L-\$10.00, M-\$8.00.  
 B1.16-1972 American Gaging Practice for Metric Screw Threads, Book No. N00026, L-\$5.00, M-\$4.00.  
 B1.20-3-1976 Dryseal Pipe Threads (Inch), Book No. N00076, L-\$6.00, M-\$4.80.  
 B1.20-4-1976 Dryseal Pipe Threads (Metric Translation of ANSI B1.20.3-1976), Book No. N00077, L-\$6.00, M-\$4.80.  
 B1.21M-1978 Metric Screw Threads—MJ Profile, Book No. N00090, L-\$8.50, M-\$6.80.  
 B1.22-1978 Gages and Gaging Practice for "MJ" Series Metric Screw Threads, Book No. N00086, L-\$10.00, M-\$8.00.  
 B2.1-1968 Pipe Threads (Except Dryseal), Book No. L00018, L-\$5.50, M-\$4.40.  
 B2.2-1968 Dryseal Pipe Threads, Book No. M00036, L-\$5.50, M-\$4.40.  
 B4-1-1966 (R1974) Hose Coupling Screw Threads, Book No. K00014, L-\$3.25, M-\$2.60.  
 B4.1-1967 (R1974) Preferred Limits and Fits for Cylindrical Parts, Book No. L00022, L-\$4.00, M-\$3.20.  
 B4.2-1978 Preferred Metric Limits and Fits, Book No. L00054, L-\$15.00, M-\$12.00.  
 B4.3-1978 General Tolerances For Metric Dimensioned Products, Book No. L00055, L-\$3.00, M-\$2.40.

## Machine Tools

- B5.1-1975 T-Slots, Their Bolts, Nuts and Tongues, Book No. M00024, L-\$3.00, M-\$2.40.  
 B5.5-1959 (R1979) Rotating Air Cylinders and Adapters, Book No. L00031, L-\$2.25, M-\$1.80.  
 B5.8-1972 Chucks and Chuck Jaws, Book No. J00024, L-\$4.50, M-\$3.60.  
 B5.9-1967 (R1972) Spindle Noses for Tool Room Lathes, Engine Lathes, Turret Lathes and Automatic Lathes, Book No. M00010, L-\$4.00, M-\$3.20.  
 B5.10-1963 (R1972) Machine Tapers, Book No. L00004, L-\$4.00, M-\$3.20.  
 B5.11-1964 (R1973) Spindle Noses and Adjustable Adapters for Multiple Spindle Drilling Heads, Book No. M00008, L-\$2.25, M-\$1.80.  
 B5.16-1952 (R1979) Accuracy of Engine and Tool Room Lathes, Book No. J00004, L-\$2.25, M-\$1.80.  
 B5.18-1972 Spindle Noses and Tool Shanks for Milling Machines, Book No. M00009, L-\$3.50, M-\$2.80.  
 B5.25-1978 Punch and Die Sets, Book No. L00027, L-\$4.50, M-\$3.60.  
 B5.28-1971 Mounting Dimensions of Lubricating and Coolant Pumps for Machine Tools, Book No. L00009, L-\$2.75, M-\$2.20.  
 B5.32-1977 Grinding Machines, Surface, Reciprocating Table—Horizontal Spindle, Book No. J00028, L-\$4.00, M-\$3.20.  
 B5.32.1-1977 Grinding Machines, Surface, Reciprocating Table—Vertical Spindle, Book No. J00053, L-\$3.00, M-\$2.40.  
 B5.33-1970 External Cylindrical Grinding Machines—Plain, Book No. M00038, L-\$2.75, M-\$2.20.  
 B5.35-1969 (R1975) Machine Mounting Specifications for Abrasive Discs and Plate Mounted Wheels, Book No. M00035, L-\$3.50, M-\$2.80.  
 B5.37-1970 External Cylindrical Grinding Machines—Centerless, Book No. M00039, L-\$2.25, M-\$1.80.  
 B5.40-1977 Spindle Noses and Tool Shanks for Horizontal Boring Machines, Book No. M00048, L-\$6.00, M-\$4.80.  
 B5.42-1970 External Cylindrical Grinding Machines—Universal, Book No. M00040, L-\$2.50, M-\$2.00.  
 B5.43-1977 Modular Machine Tool Standards, Book No. M00021, L-\$4.00, M-\$3.20.  
 B5.44-1971 Rotary Table Surface Grinding Machines, Book No. M00061, L-\$3.50, M-\$2.80.  
 B5.45-1972 Milling Machines, Book No. M00067, L-\$2.75, M-\$2.20.  
 B5.46-1972 (R1979) Symbols for Machine Tool Indicator Plates, Book No. M00065, L-\$4.50, M-\$3.60.  
 B5.47-1972 Milling Machine Arbor Assemblies, Book No. M00074, L-\$3.50, M-\$2.80.  
 B5.48-1977 Ball Screws, Book No. M00089, L-\$4.50, M-\$3.60.  
 B5.49-1977 Glossary of Mechanical Press Terms, Book No. M00090, L-\$3.50, M-\$2.80.  
 B5.50-1978 "Y" Flange Tool Shanks for Machining Centers With Automatic Tool Changers, Book No. M00097, L-\$3.00, M-\$2.40.  
 B5.51M-1979 Preferred SI Units For Machine Tools, Book No. M00099, L-\$3.00, M-\$2.40.  
 B15.1-1972 Safety Standard For Mechanical Power Transmission Apparatus, Book No. M00009, L-\$4.00, M-\$3.20.

## Pipe Flanges, Fittings, Gaskets & Valves

- B16.1-1975 Cast Iron Pipe Flanges and Flanged Fittings—Class 25, 125, 250 and 800, Book No. J00017, L-\$6.00, M-\$4.80.  
 B16.3-1977 Malleable-Iron Threaded Fittings, Class 150 and 300, Book No. L00005, L-\$6.00, M-\$4.80.  
 B16.4-1977 Cast-Iron Threaded Fittings, Class 125 and 250, Book No. J00022, L-\$5.00, M-\$4.00.  
 B16.5-1977 Steel Pipe Flanges and Flanged Fittings (Including Ratings for Class 150, 300, 400, 600, 900, 1500, and 2500), Book No. M00015, L-\$15.00, M-\$12.00.  
 B16.9-1978 Factory-Made Wrought Steel Butt Welding Fittings, Book No. M00014, L-\$7.50, M-\$6.00.  
 B16.10-1973 Face-to-Face and End-to-End Dimensions of Ferrous Valves, Book No. J00031, L-\$4.00, M-\$3.20.  
 B16.11-1973 Forged Steel Fittings, Socket-Welding and Threaded, Book No. M00016, L-\$3.00, M-\$2.40.  
 B16.12-1977 Cast-Iron Threaded Drainage Fittings, Book No. J00021, L-\$4.50, M-\$3.60.  
 B16.14-1977 Ferrous Pipe Plugs, Bushings and Locknuts with Pipe Threads, Book No. J00032, L-\$4.50, M-\$3.60.  
 B16.15-1978 Cast Bronze Threaded Fittings—Class 125 and 250, Book No. J00010, L-\$7.00, M-\$5.60.  
 B16.18-1978 Cast Bronze Solder-Joint Pressure Fittings, Book No. J00015, L-\$9.00, M-\$7.20.  
 B16.20-1973 Ring-Joint Gaskets and Grooves for Steel Pipe Flanges, Book No. L00030, L-\$4.50, M-\$3.60.  
 B16.21-1978 Nonmetallic Flat Gaskets for Pipe Flanges, Book No. L00015, L-\$5.00, M-\$4.00.  
 B16.22-1973 Wrought Copper and Bronze Solder-Joint Pressure Fittings, Book No. M00030, L-\$3.50, M-\$2.80.  
 B16.23-1976 Cast Copper Alloy Solder Joint Drainage Fittings - DWV, Book No. J00014, L-\$15.00, M-\$12.00.

- B16.24-1979 Bronze Pipe Flanges and Flanged Fittings, Class 150 and 300, Book No. J00009, L-\$5.50, M-\$4.40.  
 B16.25-1979 Butt Welding Ends, Book No. J00013, L-\$5.00, M-\$4.00.  
 B16.26-1975 Cast Copper Alloy Fittings for Flared Copper Tubes, Book No. J00008, L-\$3.00, M-\$2.40.  
 B16.28-1978 Wrought Steel Butt Welding Short Radius Elbows and Returns, Book No. M00053, L-\$4.50, M-\$3.60.  
 B16.29-1973 Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings, Book No. N00057, L-\$4.00, M-\$3.20.  
 B16.31-1971 Non-Ferrous Pipe Flanges, 150, 300, 400, 600, 900, 1500 and 2500 lb., Book No. J00042, L-\$4.00, M-\$3.20.  
 B16.32-1979 Cast Copper Alloy Solder Joint Fittings for Solvent Drainage Systems, Book No. J00044, L-\$4.50, M-\$3.60.  
 B16.33-1973 Small Manually Operated Metallic Gas Valves in Gas Distribution Systems Whose Maximum Allowable Operating Pressure Does Not Exceed 60 PSIG or 125 PSIG, Book No. J00006, L-\$4.00, M-\$3.20.  
 B16.34-1977 Steel Valves (Flanged and Butt Welding End), Book No. J00018, L-\$15.00, M-\$12.00.  
 B16.36-1975 Steel Orifice Flanges, Class 300, 400, 600, 900, 1500 and 2500, (Including 1979 Addenda—Class 400), L-\$5.00, M-\$4.00.  
 B16.36A-1979 Addenda to B16.36-1975 Steel Orifice Flanges, Book No. J0046A, L-\$2.00, M-\$1.60.  
 B16.38-1978 Large Manually Operated Metallic Gas Valves in Gas Distribution Systems Whose Maximum Allowable Operating Pressure Does Not Exceed 125 psig (8.6 bar, gage), Book No. J00055, L-\$3.50, M-\$2.80.  
 B16.39-1977 Malleable Iron Threaded Pipe Unions, Class 150, 250 and 300, Book No. L00049, L-\$4.00, M-\$3.20.  
 B16.40-1977 Manually Operated Thermoplastic Gas Shut-Offs and Valves in Gas Distribution Systems, Book No. J00054, L-\$3.00, M-\$2.40.

## Fasteners & Keys

- B17.1-1967 (R1973) Keys and Keyseats, Book No. J00038, L-\$2.75, M-\$2.20.  
 B17.2-1967 (R1978) Woodruff Keys and Keyseats, Book No. J00037, L-\$2.75, M-\$2.20.  
 B18.1.1-1972 (R1977) Small Solid Rivets, Book No. M00006, L-\$3.50, M-\$2.80.  
 B18.1.2-1972 (R1977) Large Rivets, Book No. K00023, L-\$2.75, M-\$2.20.  
 B18.2.1-1972 Square and Hex Bolts and Screws, Book No. M00014, L-\$4.50, M-\$3.60.  
 B18.2.2-1972 Square and Hex Nuts, Book No. M00043, L-\$4.50, M-\$3.60.  
 B18.2.3.1M-1979 Metric Hex Cap Screws, Book No. M00100, L-\$5.00, M-\$4.00.  
 B18.2.3.2M-1979 Metric Formed Hex Screws, Book No. M00101, L-\$5.00, M-\$4.00.  
 B18.2.3.3M-1979 Metric Heavy Hex Screws, Book No. M00102, L-\$5.00, M-\$4.00.  
 B18.2.3.4M-1979 Metric Hex Flange Screws, Book No. M00103, L-\$5.00, M-\$4.00.  
 B18.2.3.5M-1979 Metric Hex Bolts, Book No. M00104, L-\$4.50, M-\$3.60.  
 B18.2.3.6M-1979 Metric Heavy Hex Bolts, Book No. M00105, L-\$4.50, M-\$3.60.  
 B18.2.3.7M-1979 Metric Heavy Hex Structural Bolts, Book No. M00106, L-\$5.00, M-\$4.00.  
 B18.2.3.8M-1979 Metric Hex Lag Screws, Book No. M00107, L-\$4.50, M-\$3.60.  
 B18.3-1977 Socket Cap, Shoulder and Set Screws—Inch Series, Book No. M00007, L-\$6.00, M-\$4.80.  
 B18.3.1-1978 Socket Head Cap Screws (Metric Series), Book No. M00094, L-\$6.00, M-\$4.80.  
 B18.3.2M-1979 Metric Series Hexagon Keys and Bits, Book No. M00108, L-\$4.00, M-\$3.20.  
 B18.3.3M-1979 Hexagon Socket Head Shoulder Screws: Metric Series, Book No. M00109, L-\$5.00, M-\$4.00.  
 B18.3.4M-1979 Hexagon Socket Button Head Cap Screws: Metric Series, Book No. M00110, L-\$5.00, M-\$4.00.  
 B18.3.6M-1979 Metric Series Hexagon Socket Set Screws, Book No. M00111, L-\$5.00, M-\$4.00.  
 B18.5-1978 Round Head Bolts (Inch Series), Book No. L00032, L-\$4.00, M-\$3.20.  
 B18.6.1-1972 (R1977) Wood Screws, Book No. M00005, L-\$4.00, M-\$3.20.  
 B18.6.2-1972 (R1977) Slotted Head Cap Screws, Square Head Set Screws and Slotted Headless Set Screws, Book No. K00012, L-\$4.00, M-\$3.20.  
 B18.6.3-1972 (R1977) Machine Screws and Machine Screw Nuts, Book No. M00004, L-\$9.50, M-\$7.60.  
 B18.6.4-1966 (R1975) Slotted and Recessed Head Tapping Screws and Metallic Drive Screws, Book No. N00021, L-\$6.00, M-\$4.80.  
 B18.7-1972 General Purpose Semi-Tubular Rivets, Full Tubular Rivets, Split Rivets and Rivet Caps, Book No. N00059, L-\$3.50, M-\$2.80.  
 B18.8.1-1972 (R1977) Clevis Pins and Cotter Pins, Book No. L00024, L-\$2.75, M-\$2.20.  
 B18.8.2-1978 Taper Pins, Dowel Pins, Straight Pins, Grooved Pins and Spring Pins (Inch Series), Book No. L00056, L-\$7.00, M-\$5.60.  
 B18.9-1958 (R1977) Plow Bolts, Book No. L00021, L-\$2.75, M-\$2.20.  
 B18.10-1963 (R1975) Track Bolts and Nuts, Book No. M00025, L-\$2.75, M-\$2.20.  
 B18.11-1961 (R1975) Miniature Screws, Book No. K00037, L-\$2.75, M-\$2.20.  
 B18.12-1962 (R1975) Glossary of Terms for Mechanical Fasteners, Book No. M00046, L-\$6.50, M-\$5.20.  
 B18.13-1965 (R1975) Screw and Washer Assemblies—Sems, Book No. N00043, L-\$3.50, M-\$2.80.  
 B18.15-1969 Forged Eyebolts, Book No. M00037, L-\$3.50, M-\$2.80.  
 B18.17-1968 (R1975) Wing Nuts, Thumb Screws and Wing Screws, Book No. J00005, L-\$3.50, M-\$2.80.  
 B18.21.1-1972 Lock Washers, Book No. L00002, L-\$3.50, M-\$2.80.  
 B18.22.1-1965 (R1975) Plain Washers (Redesignation of B27.2-1965), Book No. L00019, L-\$2.75, M-\$2.20.  
 B18.23.1-1967 (R1975) Beveled Washers (Redesignation of B27.4-1967), Book No. L00006, L-\$2.25, M-\$1.80.

## Transmission Chains, Washers, Conveyors & Compressors

- B19.3-1972 Safety Standard for Compressors for Process Industries, Book No. B00003, L-\$3.50, M-\$2.80.  
 B20.1-1976 Safety Standards for Conveyors and Related Equipment, Book No. B00005, L-\$4.00, M-\$3.20.  
 B27.6-1972 (R1977) General Purpose Uniform Cross Section Spiral Retaining Rings, Book No. L00037, L-\$5.00, M-\$4.00.  
 B27.7-1977 General Purpose Tapered and Reduced Cross Section Retaining Pins (Metric), Book No. L00053, L-\$4.00, M-\$3.20.  
 B27.8M-1978 General Purpose Metric Tapered and Reduced Cross Section Retaining Rings—Type 3DMI—Heavy Duty External Rings, Type 3EMI—Reinforced Type "E" Rings, Type 3FMI—"C" Type Rings, Book No. L00060, L-\$4.00, M-\$3.20.

- B29.1-1975 Precision Power Transmission Roller Chains Attachments and Sprockets, Book No. M00050, L-\$7.50, M-\$6.00  
 B29.2-1957 (R1971) Inverted Tooth (Silent) Chains and Sprocket Teeth, Book No. M00002, L-\$3.50, M-\$2.80  
 B.29.3-1977 Double-Pitch Power Transmission Roller Chains and Sprockets, Book No. K00075, L-\$4.50, M-\$3.60  
 B29.4-1972 Double-Pitch Conveyor Roller Chains, Attachments, and Sprockets, Book No. M00072, L-\$4.25, M-\$3.40  
 B29.6-1972 Steel Detachable Link Chains, Attachments and Sprockets, Book No. M00066, L-\$5.50, M-\$4.40  
 B29.7-1971 Malleable Iron Detachable Link Chain and Attachments, Book No. M00018, L-\$4.50, M-\$3.60  
 B29.8-1977 Leaf Chain, Clevises and Sheaves, Book No. M00003, L-\$5.00, M-\$4.00  
 B29.9-1958 (R1974) Small Pitch Silent Chains and Sprocket Teeth Form Less Than 1/4" Pitch, Book No. K00077, L-\$2.75, M-\$2.20  
 B29.10-1972 Heavy Duty Offset Sidebar Power Transmission Roller Chains and Sprocket Teeth, Book No. M00078, L-\$5.00, M-\$4.00  
 B29.11-1974 Combination Chains, Attachments and Sprocket Teeth, Book No. K00081, L-\$5.50, M-\$4.40  
 B29.12-1974 Steel Bushed Rollerless Chains, Attachments and Sprocket Teeth, Book No. K00030, L-\$3.50, M-\$2.80  
 B29.13-1972 700 Class Pintle Chains, Attachments and Sprocket Teeth, Book No. M00064, L-\$3.50, M-\$2.80  
 B29.14-1978 "H" Type Mill Chains—Attachments and Sprocket Teeth, Book No. M00062, L-\$5.00, M-\$4.00  
 B29.15-1973 Heavy Duty Roller Type Conveyor Chains and Sprocket Teeth, Book No. M00079, L-\$3.50, M-\$2.80  
 B29.16-1974 Welded Steel Type Mill Chains, Attachments, and Sprocket Teeth, Book No. K00079, L-\$4.50, M-\$3.60  
 B29.17-1974 Hinge Type Flat Top Conveyor Chains and Sprocket Teeth, Book No. K00078, L-\$3.50, M-\$2.80  
 B29.18-1974 Welded Steel-Type Drag Chains, Attachments, and Sprocket Teeth, Book No. K00080, L-\$3.50, M-\$2.80  
 B29.19-1978 A and CA550 and 620 Roller Chains, Attachments, and Sprockets, Book No. K00085, L-\$4.50, M-\$3.60

### Cranes, Derricks, Hoists, Jacks & Slings

- B30.1-1975 Jacks, Book No. B00007, L-\$4.00, M-\$3.20  
 B30.2.0-1976 Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder), Book No. B00011, L-\$6.00, M-\$4.80  
 B30.3-1975 Hammerhead Tower Cranes, Book No. J00033, L-\$4.50, M-\$3.60  
 B30.4-1973 Portal, Tower and Pillar Cranes, Book No. J00001, L-\$4.50, M-\$3.60  
 B30.5-1968 Crawler, Locomotive and Truck Cranes, Book No. B00012, L-\$4.00, M-\$3.20  
 B30.6-1977 Derricks, Book No. B00013, L-\$4.50, M-\$3.60  
 B30.7-1977 Base Mounted Drum Hoists, Book No. B00002, L-\$4.50, M-\$3.60  
 B30.8-1971 Floating Cranes and Floating Derricks, Book No. J00023, L-\$4.50, M-\$3.60  
 B30.9-1971 Slings, Book No. B00010, L-\$5.00, M-\$4.00  
 B30.10-1975 Hooks, Book No. J00048, L-\$4.00, M-\$3.20  
 B30.11-1973 Monorail Systems and Underhung Cranes, Book No. B00015, L-\$4.00, M-\$3.20  
 B30.12-1975 Handling Loads Suspended from Rotocraft, Book No. J00047, L-\$5.50, M-\$4.40  
 B30.13-1977 Controlled Mechanical Storage Cranes, Book No. J00052, L-\$6.00, M-\$4.80  
 B30.14-1979 Side Boom Tractors, Book No. J00059, L-\$5.50, M-\$4.40  
 B30.15-1973 Mobile Hydraulic Cranes, Book No. B00017, L-\$5.50, M-\$4.40  
 B30.16-1973 Overhead Hoists, Book No. B00001, L-\$4.50, M-\$3.60

### Piping

- B31 Interpretations: Code for Pressure Piping, All current cases, Book No. M00033, L-\$13.00, M-\$10.40. Three Year Subscription Service, L-\$18.00, M-\$14.40  
*Sets forth the conditions under which new materials may be used, the Committee's interpretations of code rules as they apply to specific construction problems of code users, and special provisions to cover conditions encountered in nuclear installations. Individual Cases (Book No. M00034) are available at \$1.50, ASME members \$1.20. Please specify individual Case number.*  
 B31 Guide, Corrosion Control for ANSI B31.1 Power Piping Systems, Book No. A00089, L-\$2.00, M-\$1.60  
 B31.1-1977 Power Piping (with Addenda up to the 1980 edition), Book No. A00058, L-\$50.00, M-\$40.00  
 B31.2-1968 Fuel Gas Piping, Book No. A00036, L-\$5.00, M-\$4.00  
 B31.3-1976 Chemical Plant and Petroleum Refinery Piping (with Addenda up to the 1980 Edition), Book No. A00037, L-\$50.00, M-\$40.00  
 B31.4-1974 Liquid Petroleum Transportation Piping Systems (Including Addenda), Book No. A00038, L-\$10.00, M-\$8.00  
 B31.4a 1978 Referenced/Standards Addenda to B31.4-1974, Liquid Petroleum Transportation Piping Systems, Book No. A00039, L-\$1.25, M-\$1.00  
 B31.5-1974 Refrigeration Piping, (Including Addenda) Book No. A00040, L-\$10.50, M-\$8.40  
 B31.5-1978 Addenda to Refrigeration Piping, Book No. A0040A, L-\$2.00, M-\$1.60  
 B31.8-1975 Gas Transmission and Distribution Piping Systems, Book No. A00045, L-\$15.00, M-\$12.00  
 ASME Guide for Gas Transmission and Distribution Piping Systems—1980, Including all Addenda through December 1982. Available March, 1980. Book No. A03080, L-\$125.00, M-\$100.00  
 Binder for Gas Guide, Book No. A00028, L-\$7.50, M-\$6.00

### Surface Texture, Pipe, Gages, and Industrial Trucks

- B32.1-1952 (R1977) Preferred Thickness for Uncoated, Thin, Flat Metals (Under 0.250 in.), Book No. L00025, L-\$2.25, M-\$1.80  
 B32.2-1969 (R1979) Preferred Diameters for Round Wire—0.500 inches and under, Book No. M00012, L-\$2.25, M-\$1.80  
 B32.3a-1978 Supplement to ANSI B32.3-1977, Preferred Metric Sizes for Flat Metal Products 1978, Book No. L0045A, L-\$1.00, M-\$0.80  
 B32.3-1977 Preferred Metric Sizes for Flat Metal Products, (Including B32.3a-1978) Book No. L00045, L-\$3.00, M-\$2.40  
 B32.4-1977 Preferred Metric Sizes for Round, Square and Hexagon Metal Products, Book No. L00046, L-\$2.50, M-\$2.00

- B32.5-1977 Preferred Metric Sizes for Tubular Metal Products Other Than Pipe, Book No. L00051, L-\$2.50, M-\$2.00  
 B32.6-1977 Preferred Metric Equivalents of Inch Sizes for Tubular Metal Products Other Than Pipe, Book No. L00052, L-\$2.50, M-\$2.00  
 B36.10-1979 Welded and Seamless Wrought Steel Pipe, Book No. M00031, L-\$5.50, M-\$4.40  
 B36.19-1976 Stainless Steel Pipe, Book No. M00013, L-\$3.50, M-\$2.80  
 B40.1-1974 Gauges: Pressure and Vacuum, Indicating Dial Type—Elastic Element, Book No. K00015, L-\$5.00, M-\$4.00  
 B40.1M-1979 Gauges—Pressure Indicating Dial Type—Elastic Element Metric, Book No. K00097, L-\$5.00, M-\$4.00  
 B40.2-1977 Gauges and Indicators: Pressure and Vacuum—Indicating Digital Type, Book No. K00088, L-\$7.00, M-\$5.60  
 B46.1-1978 Surface Texture (Surface Roughness, Waviness and Lay) (Includes ANSI Y14.36-1978), Book No. M00019, L-\$10.00, M-\$8.00  
 B47.1-1974 Gage Blanks, Book No. M00082, L-\$20.00, M-\$16.00  
 B47.1A-1978 Gage Blanks—(Metric Translation of ANSI B47.1-1974) Book No. M00098, L-\$5.00, M-\$4.00  
 B56.1-1975 Low Lift and High Lift Trucks, Book No. B00006, L-\$6.50, M-\$5.20  
 B56.5-1978 Electric Guided Industrial Tow Tractors Book No. J00057, L-\$4.50, M-\$3.60  
 B56.6-1978 Rough Terrain Fork Lift Trucks, Book No. J00056, L-\$5.50, M-\$4.40  
 B73.1-1977 Specifications for Horizontal, End Suction Centrifugal Pumps for Chemical Process, Book No. J00019, L-\$4.50, M-\$3.60  
 B73.2-1975 Specifications for Vertical In-Line Centrifugal Pumps for Chemical Process, Book No. J00049, L-\$4.50, M-\$3.60  
 B88.2-1974 Procedure for Bench Calibration of Tank Level Gaging Tapes and Sounding Rules, Book No. L00043, L-\$2.75, M-\$2.20  
 B89.1.6-1976 Measurement of Qualified Plain Internal Diameters for Use as Master Rings and Ring Gages, Book No. L00048, L-\$6.00, M-\$4.80  
 B89.1.9-1973 Precision Inch Gage Blocks for Length Measurement (Thru 20 inches), Book No. L00044, L-\$5.00, M-\$4.00  
 B89.1.10-1978 Dial Indicators (For Linear Measurement), Book No. L00057, L-\$4.00, M-\$3.20  
 B89.3.1-1972 Measurement of Out-of-Roundness, Book No. L00020, L-\$4.00, M-\$3.20  
 B89.6.2-1973 Temperature and Humidity Environment for Dimensional Measurement, Book No. L00047, L-\$6.50, M-\$5.20

### Cutting Tools, Holders, Drivers, Bushings and Punches

- B94.1-1977 Blanks and Semi-Finished Blanks for Solid Carbide Taps, Book No. M00055, L-\$5.00, M-\$4.00  
 B94.2-1977 Reamers, Book No. L00028, L-\$9.00, M-\$7.20  
 B94.3-1965 (R1972) Straight Cut-Off Blanks for Lathes and Screw Machines, Book No. M00056, L-\$2.25, M-\$1.80  
 B94.4-1976 Identification System for Indexable Inserts for Cutting Tools, Book No. M00057, L-\$3.50, M-\$2.80  
 B94.5-1974 Carbide Blanks and Single-Point Brazed Tools, Book No. N00018, L-\$4.00, M-\$3.20  
 B94.7-1966 (R1972) Hobs, Book No. N00056, L-\$3.50, M-\$2.80  
 B94.8-1967 (R1972) Inserted Blade Milling Cutter Bodies, Book No. K00044, L-\$2.25, M-\$1.80  
 B94.9-1971 Taps—Cut and Ground Threads, Book No. K00043, L-\$6.75, M-\$5.40  
 B94.10-1967 (R1972) High-Speed Steel and Cast Non-Ferrous Single-Point Tools and Tool Holders, Book No. N00034, L-\$2.25, M-\$1.80  
 B94.11-1967 (R1972) Twist Drills, Book No. M00027, L-\$4.00, M-\$3.20  
 B94.12-1977 Carbide-Tipped Masonry Drills and Blanks for Carbide-Tipped Masonry Drills, Book No. L00013, L-\$4.00, M-\$3.20  
 B94.13-1976 Blanks for Carbide Burs, Book No. J00020, L-\$4.50, M-\$3.60  
 B94.14-1968 (R1975) Punches—Basic Head Type, Book No. K00052, L-\$2.75, M-\$2.20  
 B94.14.1-1977 Punches—Basic Head Type (Metric), Book No. M00092, L-\$5.00, M-\$4.00  
 B94.16-1968 (R1975) Retainers—Basic Ball-Lock, Punch and Die Button Light and Heavy Duty, Book No. K00054, L-\$2.75, M-\$2.20  
 B94.16.1-1978 Retainers—Basic Ball-Lock Punch and Die Button, Light and Heavy Duty (Metric), Book No. M00095, L-\$4.50, M-\$3.60  
 B94.17-1968 (R1975) Gages—Functional, Ball-Lock Punches, Die Buttons and Retainers, Book No. K00057, L-\$2.75, M-\$2.20  
 B94.17.1-1977 Gages—Functional, Ball-Lock Punches, Die Buttons and Retainers (Metric), Book No. M00093, L-\$3.00, M-\$2.40  
 B94.18-1968 (R1975) Punches—Basic Ball-Lock Light and Heavy Duty, Book No. K00055, L-\$3.50, M-\$2.80  
 B94.18.1-1977 Punches—Basic Ball-Lock Light and Heavy Duty (Metric), Book No. M00087, L-\$8.00, M-\$6.40  
 B94.19-1977 Milling Cutters and End Mills, Book No. L00008, L-\$12.00, M-\$9.60  
 B94.20-1977 Specifications for Carbide Blanks for Twist Drills, Reamers, End Mills, and Random Rod, Book No. K00056, L-\$7.00, M-\$5.60  
 B94.21-1968 (R1974) Gear Shaper Cutters, Book No. J00007, L-\$4.50, M-\$3.60  
 B94.22-1968 (R1975) Punches—Variable, Head Type, Book No. L00041, L-\$4.25, M-\$3.40  
 B94.22.1-1977 Punches—Variable, Head Type Metric, Book No. L00050, L-\$7.50, M-\$6.00  
 B94.23-1969 (R1975) Punch Guide Bushings—Variable, Press Fit, Book No. L00040, L-\$3.25, M-\$2.60  
 B94.24-1976 Heavy Duty Carbide Inserts for Cutting Tools, Book No. L00034, L-\$3.50, M-\$2.80  
 B94.25-1975 Indexable Inserts for Cutting Tools, Book No. L00038, L-\$14.50, M-\$11.60  
 B94.26-1969 (R1977) Indexable (Throw-away) Inserts Holders, Book No. L00039, L-\$4.75, M-\$3.80  
 B94.27-1970 (R1976) Die Buttons—Basic Taper Relief, Press Fit, Book No. M00041, L-\$3.75, M-\$3.00  
 B94.28-1970 (R1976) Die Buttons—Basic Straight Relief, Press Fit, Book No. M00045, L-\$3.75, M-\$3.00  
 B94.29-1970 (R1976) Die Buttons—Basic Ball Lock, Book No. M00059, L-\$3.75, M-\$3.00  
 B94.29.1-1977 Die Buttons—Basic Ball-Lock (Metric), Book No. M00088, L-\$5.00, M-\$4.00  
 B94.30-1979 (R1976) Die Buttons—Variable, Press Fit, Book No. M00060, L-\$3.75, M-\$3.00  
 B94.31-1969 (R1976) Steel Rotary Slitting Knives and Steel Spacing Collars, Book No. K00061, L-\$2.25, M-\$1.80  
 B94.32-1954 (R1971) Circular & Dove Tailed Forming Tool Blanks (Redesignation of B5.7-1954), Book No. J00025, L-\$2.75, M-\$2.20  
 B94.33-1974 Jig Bushings, Book No. K00021, L-\$5.25, M-\$4.20  
 B94.34-1946 (R1971) Life Tests of Single Point Tools (Redesignation of B5.19-1946), Book No. L00001, L-\$2.25, M-\$1.80  
 B94.35-1972 Drill Drivers, Split-Sleeve, Collet Type, Book No. J00030, L-\$2.75, M-\$2.20  
 B94.36-1956 (R1971) Life Tests for Single-Point Tools of Sintered Carbide (Redesignation of B5.34-1956), Book No. M00032, L-\$2.25, M-\$1.80

- B94.37-1972 Carbide Blanks and Cutting Tools, Single-Point, Carbide-Tipped, Roller Turner Type, Book No. M00081, L-\$3.50, M-\$2.80
- B94.38-1972 (R1978) Punches—Variable, Angle Head Type and Related Quill Bushings, Book No. M00068, L-\$3.50, M-\$2.80
- B94.39-1972 (R1978) Punches—Basic, Combination Angle Head Type and Related Quill Bushings, Book No. M00069, L-\$3.50, M-\$2.80
- B94.40-1972 (R1978) Punches—Wire Type, Book No. M00070, L-\$2.75, M-\$2.20
- B94.41-1972 (R1978) Punches—Basic, Angle Head Type and Related Quill Bushings, Book No. M00071, L-\$3.50, M-\$2.80
- B94.42-1972 (R1978) Carbide Blanks for Tipping Circular Saws, Book No. M00077, L-\$2.25, M-\$1.80
- B94.43-1972 (R1978) Die Buttons—Variable, Press Fit, Headless and Head Type, Step Relief, Book No. M00075, L-\$2.75, M-\$2.20
- B94.44-1972 (R1978) Punches—Basic, Cylindrical Head Type and Related Quill Bushings, Book No. M00076, L-\$3.50, M-\$2.80
- B94.45-1973 Precision Indexable Insert Holders (Includes B94.45a-1975), Book No. M00080, L-\$16.00, M-\$12.80
- B94.45a-1975 Insert Radius Compensation Charts for Precision Indexable Insert Holders, Book No. M00083, L-\$3.00, M-\$2.40
- B94.46-1973 Carbide Seats Used With Indexable Inserts for Clamp Type Holders, Book No. L00007, L-\$4.50, M-\$3.60
- B94.47-1973 Carbide Chip Breakers Used With Indexable Inserts for Clamp Type Holders, Book No. L00029, L-\$5.00, M-\$4.00
- B94.48-1976 Precision Indexable Insert Cartridges, Book No. M00086, L-\$4.50, M-\$3.60
- B94.49-1975 Spade Drill Blades and Spade Drill Holders, Book No. L00035, L-\$6.00, M-\$4.80
- B94.50-1975 Basic Nomenclature and Definitions for Single-Point Cutting Tools, Book No. M00084, L-\$7.50, M-\$6.00
- B94.51-1976 Specifications for Band Saw Blades (Metal Cutting), Book No. M00085, L-\$4.50, M-\$3.60
- B94.52-1977 Hack Saw Blades, Book No. M00091, L-\$4.00, M-\$3.20
- B94.53-1978 Solid Steel Rectangular Metal Cutting Squaring Share Knives—Dimensional Tolerances 1978, Book No. M00096, L-\$3.50, M-\$2.80
- B95.1-1977 Terminology for Pressure Relief Devices, Book No. M00063, L-\$3.50, M-\$2.80
- B107.1-1978 Socket Wrenches, Hand (Inch Series), Book No. N00088, L-\$5.00, M-\$4.00
- B107.2-1975 Socket Wrenches Power Drive (Impact) (Inch Series), Book No. N00013, L-\$4.50, M-\$3.60
- B107.3-1978 Socket Wrenches Power Drive (Non-Impact) (Inch Series), Book No. N00089, L-\$5.00, M-\$4.00
- B107.4-1973 Driving and Spindle Ends for Portable Hand, Air, and Electric Tools, Book No. N00023, L-\$6.75, M-\$5.40
- B107.5-1977 Socket Wrenches, Hand (Metric Series), Book No. N00082, L-\$4.50, M-\$3.60
- B107.6-1978 Wrenches, Box, Open-End, Combination, and Flare Nut (Inch Series), Book No. N00084, L-\$4.50, M-\$3.60
- B107.7-1978 Wrenches, Splined Socket, Square Drive, High Strength, Thin Wall; Box Wrench, High Strength, Thin Wall (Inch Series), Book No. N00085, L-\$4.00, M-\$3.20
- B107.8-1977 Adjustable Wrenches, Book No. N00083, L-\$3.50, M-\$2.80
- B107.9-1978 Wrenches, Box, Open End, Combination And Flare Nut (Metric Series), Book No. N00087, L-\$5.00, M-\$4.00

### Gas Turbine Procurement

- B133.1-1978 Gas Turbine Terminology 1978, Book No. K00093, L-\$3.50, M-\$2.00
- B133.2-1977 Basic Gas Turbine, Book No. K00090, L-\$2.50, M-\$2.00
- B133.4-1978 Gas Turbine Control and Protection Systems, Book No. K00091, L-\$3.00, M-\$2.40
- B133.5-1978 Procurement Standard for Gas Turbine Electrical Equipment, Book No. K00096, L-\$3.50, M-\$2.80
- B133.6-1978 Procurement Standard for Gas Turbine Ratings and Performance, Book No. K00098, L-\$4.00, M-\$3.20
- B133.7-1977 Gas Turbine Fuels, Book No. K00096, L-\$4.00, M-\$3.20
- B133.8-1977 Gas Turbine Installation Sound Emissions, Book No. K00087, L-\$4.50, M-\$3.60
- B133.9-1979 Procurement Standard for Gas Turbine Environmental Requirements and Responsibilities, Book No. K00099, L-\$5.00, M-\$4.00
- B133.16-1978 Procurement Standard for Gas Turbine Marine Applications, Book No. K00095, L-\$5.00, M-\$4.00
- ANSI/ASME B205-1978 Ferrous Piston Rings (8 to 40 inches Diameter), Book No. L00058, L-\$4.50, M-\$3.60
- ANSI/ASME B205.1-1978 Ferrous Piston Rings (200 to 1000 mm Diameter), Book No. L00059, L-\$4.50, M-\$3.60

### Food, Drug and Beverage Equipment

- ANSI/ASME F2.1-1975 Food, Drug and Beverage Equipment (With Addenda), Book No. A00078, L-\$5.00, M-\$4.00
- ANSI/ASME F2.1a-1976 Addenda to Food, Drug and Beverage Equipment ANSI/ASME F2.1-1975, Book No. A00088, L-\$2.00, M-\$1.60

### Automatic Control and Materials Handling

- MC85.1-1963 Terminology for Automatic Control (With Supplement), Book No. N00036, L-\$6.00, M-\$4.80
- MC85.1a-1966 Supplement only, Book No. N00052, L-\$1.75, M-\$1.40
- MC85.1b-1972 Supplement only, Book No. N00037, L-\$1.75, M-\$1.40
- MC88.1-1972 (R1978) Guide For Dynamic Calibration of Pressure Transducers, Book No. L00042, L-\$5.00, M-\$4.00
- MH1.1.2-1978 Pallet Definitions and Terminology, Book No. M00073, L-\$4.00, M-\$3.20
- MH1.2.2-1975 Pallet Sizes, Book No. K00082, L-\$3.50, M-\$2.80
- MH1.4.1-1977 Procedures For Testing Pallets, Book No. K00089, L-\$6.00, M-\$4.80
- MH5.1.1M-1979 Requirements For Closed Van Cargo Containers, Book No. K00069, L-\$18.00, M-\$14.40
- MH5.3-1970 Specifications for Identification and Marking of Cargo Containers, Book No. K00013, L-\$2.75, M-\$2.20
- MH5.6M-1978 Basic Interface Requirements For Cargo Container Chassis, Book No. K00094, L-\$4.00, M-\$3.20
- MH11.1-1973 (R1978) Double Race or Bi-Level Swivel and Rigid Industrial Casters, Book No. K00051, L-\$2.75, M-\$2.20
- MH11.3-1978 Load Handling Symbols for Powered Industrial Trucks, Book No. K00073, L-\$3.00, M-\$2.40

TRANSACTIONS OF THE ASME

- MH11.4-1973 Forks and Fork Carriers for Powered Industrial Forklift Trucks, Book No. K00074, L-\$2.75, M-\$2.20
- MH14.1-1978 Industrial Loading Dockboards (Ramps), Book No. K00092, L-\$3.50, M-\$2.80

### Nuclear Power Plants

- ANSI/ASME NQA-1979 Quality Assurance Program Requirements For Nuclear Power Plants (with Addenda up to the 1982 Edition), Book No. A00105, L-\$40.00, M-\$32.00
- N45.2-1971 Quality Assurance Program Requirements for Nuclear Power Plants, Book No. A00052, L-\$4.00, M-\$3.20
- ANSI/ASME N45.2-1977 Quality Assurance Program Requirements for Nuclear Facilities, Book No. A00090, L-\$4.50, M-\$3.60
- N45.2.1-1973 Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants, Book No. A00056, L-\$4.00, M-\$3.20
- N45.2.2-1972 Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants (Under Construction Phase), Book No. A00054, L-\$4.50, M-\$3.60
- ANSI/ASME N45.2.2-1978 Packaging, Shipping, Receiving, Storage and Handling of Items For Nuclear Power Plants, Book No. A00102, L-\$5.00, M-\$4.00
- N45.2.3-1973 (R1978) Housekeeping During the Construction Phase of Nuclear Power Plants, Book No. A00057, L-\$4.00, M-\$3.20
- N45.2.5-1974 Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants, Book No. A00077, L-\$4.50, M-\$3.60
- ANSI/ASME N45.2.5-1978 Supplementary Quality Assurance Requirements for Installation, Inspections, and Testing of Structural Concrete, Structural Steel, Soils and Foundations During the Construction Phase of Nuclear Power Plants, Book No. A00099, L-\$5.00, M-\$4.00
- N45.2.6-1973 Qualifications of Inspection, Examination, and Testing Personnel for the Construction Phase of Nuclear Power Plants, Book No. A00055, L-\$4.00, M-\$3.20
- ANSI/ASME N45.2.6-1978 Qualifications of Inspection, Examination, and Testing Personnel For Nuclear Power Plants, Book No. A00101, L-\$5.00, M-\$4.00
- N45.2.8-1975 Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants, Book No. A00079, L-\$4.00, M-\$3.20
- N45.2.9-1974 Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants, Book No. A00076, L-\$4.00, M-\$3.20
- ANSI/ASME N45.2.9-1979 Requirements For Collection, Storage and Maintenance of Quality Assurance Records For Nuclear Power Plants, Book No. A00104, L-\$3.50, M-\$2.80
- N45.2.10-1973 Quality Assurance Terms and Definitions, Book No. A00069, L-\$3.00, M-\$2.40
- N45.2.11-1974 Quality Assurance Requirements for the Design of Nuclear Power Plants, Book No. A00072, L-\$5.00, M-\$4.00
- N45.2.12-1977 Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants, Book No. A00095, L-\$3.00, M-\$2.40
- N45.2.13-1976 Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants, Book No. A00086, L-\$5.00, M-\$4.00
- ANSI/ASME N45.2.20-1979 Supplement Quality Assurance Requirements For Subsurfaces Investigations for Nuclear Power Plants, Book No. A00106, L-\$4.00, M-\$3.20
- ANSI/ASME N45.2.23-1978 Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants, Book No. A00098, L-\$3.50, M-\$2.80
- N278.1-1975 Self-Operated and Power-Operated Safety-Related Valves Functional Specification Standard, Book No. A00084, L-\$3.00, M-\$2.40
- ANSI/ASME N509-1976 Nuclear Power Plant Air Cleaning Units and Components, Book No. A00085, L-\$10.00, M-\$8.00
- N510-1975 Testing of Nuclear Air-Cleaning Systems, Book No. A00082, L-\$5.00, M-\$4.00
- N626.0-1974 Qualifications and Duties for Authorized Nuclear Inspection, Book No. J00061, L-\$3.50, M-\$2.80
- N626.1-1975 Qualifications and Duties for Authorized Nuclear Inspection, Book No. J00062, L-\$3.00, M-\$2.40
- ANSI/ASME N626.2-1976 Qualifications and Duties for Authorized Nuclear Inspection (Concrete), Book No. J00063, L-\$3.50, M-\$2.80
- ANSI/ASME N626.3-1978 Qualifications and Duties of Personnel Engaged in ASME Boiler and Pressure Vessel Code, Section III, Division 1 and 2, Certifying Activities, Book No. A00100, L-\$3.50, M-\$2.80
- ANSI/ASME N626.3-1979 Qualifications and Duties of Personnel Engaged in ASME Boiler and Pressure Vessel Code, Section III, Division 1 and 2, Certifying Activities, Book No. A00107, L-\$4.00, M-\$3.20

### Offshore Technology

- ANSI/ASME OCS-1-1977 Quality Assurance and Certification for Safety and Pollution Prevention Equipment Used in Offshore Oil and Gas Operations (Including Addenda through 1980 Edition), Book No. A00093, L-\$15.00, M-\$12.00
- ANSI/ASME OCS-2-1977 Accreditation of Testing Laboratories for Safety and Pollution Prevention Equipment Used in Offshore Oil and Gas Operations (Including Addenda through 1980 Edition), Book No. A00094, L-\$15.00, M-\$12.00

### Pressure Vessels For Human Occupancy

- ANSI/ASME PVHO 1-1977 Safety Standard for Pressure Vessels for Human Occupancy, (including PVHO 1a-1977), Book No. A00092, L-\$12.50, M-\$10.00
- ANSI/ASME PVHO 1a-1979 Addenda to Safety Standard for Human Occupancy, ANSI/ASME PVHO 1-1977, Book No. A00092A, L-\$5.00, M-\$4.00

### Letter Symbols

- Y1.1-1972 Abbreviations—For Use on Drawings and in Text, Book No. J00003, L-\$12.00, M-\$9.60
- Y10.1-1972 Glossary of Terms Concerning Letter Symbols, Book No. K00003, L-\$2.25, M-\$1.80
- Y10.2-1958 Letter Symbols for Hydraulics, Book No. K00029, L-\$2.25, M-\$1.80
- Y10.3-1968 Letter Symbols for Quantities Used in Mechanics of Solids, Book No. K00016, L-\$3.50, M-\$2.80
- Y10.4-1957 Letter Symbols for Heat and Thermodynamics, Book No. K00028, L-\$2.25, M-\$1.80
- Y10.5-1968 Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering, Book No. K00045, L-\$4.00, M-\$3.20

SR-9



Y10.7-1954 Letter Symbols for Aeronautical Sciences, Book No. K00025, L-\$3.50, M-\$2.80  
 Y10.8-1962 Letter Symbols for Structural Analysis, Book No. K00034, L-\$2.25, M-\$1.80  
 Y10.10-1953 (R1973) Letter Symbols for Meteorology, Book No. K00031, L-\$2.25, M-\$1.80  
 Y10.11-1953 (R1959) Letter Symbols for Acoustics, Book No. K00024, L-\$2.25, M-\$1.80  
 Y10.12-1955 (R1973) Letter Symbols for Chemical Engineering, Book No. K00026, L-\$2.75, M-\$2.20  
 Y10.14-1959 Letter Symbols for Rocket Propulsion, Book No. K00035, L-\$3.50, M-\$2.80  
 Y10.15-1958 (R1973) Letter Symbols for Petroleum Reservoir Engineering and Electric Logging, Book No. N00019, L-\$2.75, M-\$2.20  
 Y10.16-1964 (R1973) Letter Symbols for Shell Theory, Book No. M00049, L-\$2.25, M-\$1.80  
 Y10.17-1961 (R1973) Guide for Selecting Greek Letters Used as Letter Symbols for Engineering Mathematics, Book No. K00039, L-\$2.25, M-\$1.80  
 Y10.18-1967 (R1977) Letter Symbols for Illuminating Engineering, Book No. K00042, L-\$2.25, M-\$1.80  
 Y10.20-1975 Mathematical Signs and Symbols for Use in Physical Sciences and Technology (Includes Y10.20a-1975 Supplement) Book No. K00084, L-\$5.00, M-\$4.00

### Drafting Practices, Charts and Illustrations

Y14 Report Digital Representation of Physical Object Shapes, Book No. N00075, L-\$4.00, M-\$3.20  
 Y14 Report, Number 2—Guideline for Documenting and Computer Systems Used in Computer-Aided Preparation of Product Definition Data—User Instructions, Book No. N00078, L-\$2.50, M-\$2.00  
 Y14 Report, Number 3—Guideline for Documenting of Computer Systems in Computer-Aided Preparation of Product Definition Data—Design Requirements, Book No. N00079, L-\$2.50, M-\$2.00  
 Y14.1-1975 Drawing Sheet Size and Format, Book No. N00001, L-\$3.00, M-\$2.40  
 Y14.2-M-1979 Line Conventions and Lettering, Book No. N00002, L-\$5.00, M-\$4.00  
 Y14.3-1975 Multi and Sectional View Drawings, Book No. N00003, L-\$4.50, M-\$3.60  
 Y14.4-1975 Pictorial Drawing, Book No. N00004, L-\$3.00, M-\$2.40  
 Y14.5-1973 Dimensioning and Tolerancing, Book No. N00005, L-\$10.00, M-\$8.00  
 Y14.6-1978 Screw Thread Representation, Book No. N00006, L-\$4.00, M-\$3.20  
 Y14.7.1-1971 Gear Drawing Standards—Part 1: for Spur Helical Double Helical and Rack, Book No. K00067, L-\$3.50, M-\$2.80  
 Y14.7.2-1978 Gear and Spline Drawing Standards—Part 2, Bevel and Hypoid Gears, Book No. N00061, L-\$4.50, M-\$3.60  
 Y14.9-1958 Forgings, Book No. N00009, L-\$3.00, M-\$2.40  
 Y14.10-1959 Metal Stampings, Book No. N00010, L-\$3.00, M-\$2.40  
 Y14.15-1966 (R1973) Electrical and Electronics Diagrams (With 1971 Supplement), Book No. N00015, L-\$8.00, M-\$6.40  
 Y14.15a-1971 Interconnection Diagrams, Book No. N00060, L-\$1.75, M-\$1.40  
 Y14.15b-1973 Information Sheet on Y14.15-1966 (R1973), Book No. N00016, L-\$1.25, M-\$1.00  
 Y14.17-1966 (R1974) Fluid Power Diagrams, Book No. N00017, L-\$4.00, M-\$3.20  
 Y14.26.3-1975 Dictionary of Terms for Computer-Aided Preparation of Product Definition Data (Including Engineering Drawings), Book No. N00012, L-\$3.50, M-\$2.80  
 Y14.32.1-1974 Chassis Frames—Passenger Car and Light Truck—Ground Vehicle Practices, Book No. N00008, L-\$4.00, M-\$3.20  
 Y14.36-1978 Surface Texture Symbols, Book No. N00080, L-\$3.00, M-\$2.40  
 Y15.1M-1979 Illustrations for Publication and Projection, Book No. K00010, L-\$5.00, M-\$4.00  
 Y15.1M-1979 Time Series Charts, Book No. M00023, L-\$12.00, M-\$9.60  
 Y15.3-1974 ASME Standard 101, Operation and Flow Process Charts 1972, Book No. L00017, L-\$4.00, M-\$3.20

### Graphic Symbols

Y32.2-1975 Graphic Symbols for Electrical and Electronic Diagrams, Book No. K00041, L-\$8.00, M-\$6.40  
 Y32.4-1977 Graphic Symbols for Plumbing Fixtures for Diagrams Used in Architecture and Building Construction, Book No. K00007, L-\$4.00, M-\$3.20  
 Y32.7-1972 (R1979) Graphic Symbols for Railroad Maps and Profiles, Book No. K00008, L-\$4.50, M-\$3.60  
 Y32.10-1967 (R1974) Graphic Symbols for Fluid Power Diagrams, Book No. N00022, L-\$4.00, M-\$3.20  
 Y32.11-1961 Graphical Symbols for Process Flow Diagrams in Petroleum and Chemistry Industries, Book No. K00040, L-\$2.25, M-\$1.80  
 Y32.18-1972 (R1978) Symbols for Mechanical and Acoustical Elements as Used in Schematic Diagrams, Book No. K00011, L-\$3.50, M-\$2.80  
 Z32.2.3-1949 (R1953) Graphical Symbols for Pipe Fittings, Valves, and Piping, Book No. K00006, L-\$2.25, M-\$1.80  
 Z32.2.4-1949 (R1953) Graphical Symbols for Heating, Ventilating and Air Conditioning, Book No. K00005, L-\$2.25, M-\$1.80  
 Z32.2.6-1950 (R1956) Graphical Symbols for Heat-Power Apparatus, Book No. K00004, L-\$2.25, M-\$1.80

### Z94 Series - Industrial Engineering Technology

Z94.1-1972 Biomechanics, Book No. N00061, L-\$4.00, M-\$3.20  
 Z94.2-1972 Cost Engineering, Book No. N00062, L-\$2.75, M-\$2.20  
 Z94.3-1972 Data Processing and Systems Design, Book No. N00063, L-\$5.00, M-\$4.00  
 Z94.4-1972 Distribution and Marketing, Book No. N00064, L-\$2.75, M-\$2.20  
 Z94.5-1972 Engineering Economy, Book No. N00065, L-\$3.50, M-\$2.80  
 Z94.6-1972 Facility Planning, Book No. N00066, L-\$5.00, M-\$4.00  
 Z94.7-1972 Materials Processing, Book No. N00067, L-\$9.00, M-\$7.20  
 Z94.8-1972 Applied Mathematics, Book No. N00068, L-\$9.00, M-\$7.20  
 Z94.9-1972 Organization Planning and Theory, Book No. N00069, L-\$2.75, M-\$2.20  
 Z94.10-1972 Production Planning and Control, Book No. N00070, L-\$4.00, M-\$3.20  
 Z94.11-1972 Applied Psychology, Book No. N00071, L-\$5.00, M-\$4.00  
 Z94.12-1972 Work Measurements and Methods, Book No. N00072, L-\$3.50, M-\$2.80  
 1972 Index to Z94 Industrial Engineering Terminology, Book No. N00073, L-\$11.00, M-\$8.80  
 Z223.1-1974 National Fuel Gas Code, Book No. N00074, L-\$3.00, M-\$2.40

### 1977 ASME Boiler and Pressure Vessel Code

Available in both Bound (see book numbers beginning with R) and Loose-Leaf (see book numbers beginning with W) editions. Prices include automatic addenda service up to the 1980 edition.

Section I Power Boilers, Book No. R00010, L-\$45.00, M-\$36.00; Book No. W00010, L-\$65.00, M-\$52.00  
 Section II Material Specifications  
 Part A—Ferrous Materials, Book No. R0002A, L-\$95.00, M-\$76.00, Book No. W0002A, L-\$140.00, M-\$112.00  
 Part B—Nonferrous Materials, Book No. R0002B, L-\$95.00, M-\$76.00, Book No. W0002B, L-\$140.00, M-\$112.00  
 Part C—Welding Rods, Electrodes and Filler Metals, Book No. R0002C, L-\$35.00, M-\$28.00, Book No. W0002C, L-\$50.00, M-\$40.00  
 Section III Division 1 and 2  
 Subsection NCA—Nuclear Power Plant Components: General Requirements, Book No. R0003R, L-\$45.00, M-\$36.00, Book No. W0003R, L-\$70.00, M-\$56.00  
 Section III Division 1  
 Subsection NB—Class I Components, Book No. R0003B, L-\$60.00, M-\$48.00, Book No. W0003B, L-\$90.00, M-\$72.00  
 Subsection NC—Class 2 Components, Book No. R0003C, L-\$60.00, M-\$48.00, Book No. W0003C, L-\$90.00, M-\$72.00  
 Subsection ND—Class 3 Components, Book No. R0003D, L-\$60.00, M-\$48.00, Book No. W0003D, L-\$90.00, M-\$72.00  
 Subsection NE—Class MC Components, Book No. R0003E, L-\$50.00, M-\$48.00, Book No. W0003E, L-\$90.00, M-\$72.00  
 Subsection NF—Component Supports, Book No. R0003F, L-\$35.00, M-\$28.00, Book No. W0003F, L-\$45.00, M-\$36.00  
 Subsection NG—Core Support Structures, Book No. R0003G, L-\$45.00, M-\$36.00, Book No. W0003G, L-\$75.00, M-\$60.00  
 Appendices, Book No. R0003A, L-\$75.00, M-\$60.00, Book No. W0003A, L-\$100.00, M-\$80.00  
 Section III Division 2—Code for Concrete Reactor Vessels and Containers, Book No. R00032, L-\$80.00, M-\$64.00, Book No. W00032, L-\$110.00, M-\$88.00  
 Section IV Heating Boilers, Book No. R00040, L-\$55.00, M-\$44.00, Book No. W00040, L-\$80.00, M-\$64.00  
 Section V Nondestructive Examination, Book No. R00050, L-\$60.00, M-\$48.00, Book No. W00050, L-\$85.00, M-\$68.00  
 Section VI Recommended Rules for Care and Operation of Heating Boilers, Book No. R00060, L-\$25.00, M-\$20.00, Book No. W00060, L-\$30.00, M-\$24.00  
 Section VII Recommended Rules for Care of Power Boilers, Book No. R00070, L-\$25.00, M-\$20.00, Book No. W00070, L-\$30.00, M-\$24.00  
 Section VIII Pressure Vessels  
 Division 1, Book No. R00081, L-\$85.00, M-\$68.00, Book No. W00081, L-\$125.00, M-\$100.00  
 Division 2—Alternative Rules, Book No. R00082, L-\$85.00, M-\$68.00, Book No. W00082, L-\$125.00, M-\$100.00  
 Section IX Welding and Brazing Qualifications, Book No. R00090, L-\$45.00, M-\$36.00, Book No. W00090, L-\$65.00, M-\$52.00  
 Section X Fiberglass-Reinforced Plastic Pressure Vessels, Book No. R00100, L-\$40.00, M-\$32.00, Book No. W00100, L-\$60.00, M-\$48.00  
 Section XI Rules for Inservice Inspection of Nuclear Power Plant Components:  
 Division 1, Book No. R00111, L-\$60.00, M-\$48.00, Book No. W00111, L-\$90.00, M-\$72.00  
 Code Case Books (Loose-Leaf Edition Only)  
 Nuclear Components, Book No. W0012N, L-\$100.00, M-\$80.00  
 Boilers and Pressure Vessels, Book No. W00120, L-\$70.00, M-\$56.00  
 Complete Code (Special offer for all of the above), Book No. R00230, L-\$1,300.00, M-\$1,040.00, Book No. W00230, L-\$1,850.00, M-\$1,480.00  
 Binder for Loose-Leaf Edition (2-inch capacity), Book No. W00140, L-\$14.00, M-\$11.20

### Data Report Forms

Data Report Forms, samples of which are shown in the various Sections of the ASME Boiler and Pressure Vessel Code, may be obtained from the ASME Order Department in pads of 100 sheets each at a cost of \$6.00 per pad. Please order by Book Number which follows each title. No member discount.

A1 Manufacturers' Data Report for Pressure Vessels (E00112)  
 A-2 Manufacturers' Partial Data Report (A Part of a Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer) (E00114)  
 A-3 Manufacturers' Data Report Supplementary Sheet (E00119)  
 C-1 Constructors' Data Report for Concrete Reactor Vessels and Containers (E00077)  
 C-2 Fabricators' Data Report for Parts of Concrete Reactor Vessels and Containers (E00081)  
 H-2 Manufacturers' Data Report for All Types of Boilers Except Water-tube and Those Made of Cast Iron (E00101)  
 H-3 Manufacturers' Data Report for Watertube Boilers (E00102)  
 H-4 Manufacturers' Partial Data Report (E00103)  
 H-5 Manufacturers' Master Data Report for Boilers Constructed from Cast Iron (E00041)  
 HLW-6 Manufacturers' Report for Lined Water Heaters (E00105)  
 HLW-7 Manufacturers' Partial Data Report for Lined Water Heaters (E00106)  
 HLW-8 Manufacturers' Master Data Proof Test Report for Lined Water Heaters (E00107)  
 N-1 N Certificate Holders' Data Report for Nuclear Vessels (E00038)  
 N-1A N Certificate Holders' Data Report for Nuclear Vessels (Alternate Form for Single Chamber Completely Shop-Fabricated Vessels Only) (E00039)  
 N-2 NPT Certificate Holders' Data Report for Nuclear Part and Appendices (E00040)  
 N-3 Owners' Data Report for Nuclear Power Plant Components (E00024)  
 N-5 Data Report for Field Installation or Shop Assembly of Nuclear Power Plant Components, Component Supports, and Appendices (E00025)  
 N-6 Manufacturers' Data Report for Storage Tanks (E00054)  
 N-7 Manufacturers' Data Report for Storage Tank Parts and Appendices (E00055)  
 NCS-1 N Certificate Holders' Data Report for Core Support Structures (E00065)  
 NCS-2 NPT Certificate Holders' Data Report for Core Support Structures and Related Parts or Appendices Designed by Others (E00067)  
 NF-1 NPT Certificate Holders' Data Report for Component Supports (E00075)  
 NF-2 NPT Certificate Holders' Partial Data Report for Parts for Component Support (E00076)  
 NIS-1 Owners' Data Report for Inservice Inspections (E00029)  
 NM-1 Data Report for Tubular Pressure Vessels and Fittings Welded with Filler Metal (E00080)  
 NPP-1 Data Report for Fabricated Nuclear Piping Subassemblies (E00062)  
 NPV-1 N Certificate Holders' Data Report for Nuclear Pumps or Valves (E00037)  
 NR-1 NPT Certificate Holders' Data Report for Rupture Discs (E00026)  
 NV-1 N Certificate Holders' Data Report for Safety and Safety Relief Valves (E00042)  
 P-2 Manufacturers' Data Report for All Types of Boilers Except Watertube and Electric (E00068)

P-2A Manufacturers' Data Report for All Types Electric Boilers (E00120)  
P-3 Manufacturers' Data Report for Watertube Boilers, Superheaters, Waterwalls, and Economizers (E00069)  
P-3A Engineering - Contractor Data Report for a Complete Boiler Unit (E00070)  
P-4 Manufacturers' Partial Data Report (E00071)  
P-4A Manufacturers' Data Report for Fabricated Piping (E00072)  
P-5 Summary Data Report for Process Steam Generators (E00073)  
P-6 Manufacturers' Data Report Supplementary Sheet (E00074)  
QB-482 Brazing Procedure Specification (E00031)  
QB-483 Procedure Qualification Record (PQR) (E00032)  
QB-484 Manufacturers' Record of Brazing or Welding Operator Qualification Tests (E00033)  
QW-482 Suggested Format For Welding Procedure Specification (WPS) (E00006)  
QW-483 Suggested Format For Procedure Qualification Record (PQR) (E00007)  
QW-484 Suggested Format For Manufacturers' Record of Welder or Welding Operator Qualification Tests (E00008)  
RP-1 Manufacturers' Data Report for Fiberglass-Reinforced Plastic Pressure Vessels (E00115)  
RP-2 Manufacturers' Partial Data Report (A Part of a Fiberglass-Reinforced Plastic Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer) (E00116)  
U-1 Manufacturers' Data Report for Pressure Vessels (E00118)  
U-1A Manufacturers' Data Report for Pressure Vessels (Alternate Form for Single Chamber Completely Shop-Fabricated Vessels Only) (E00117)  
U-2 Manufacturers' Partial Data Report (A Part of a Pressure Vessel Fabricated by One Manufacturer for Another) (E00110)  
U-3 Manufacturers' Certificate of Compliance Covering Pressure Vessels to be Stamped with the UM-Symbol (E00111)  
U-4 Manufacturers' Data Report Supplementary Sheet (E00118)

### Books of Interest to Boiler and Pressure Vessel Code Users

Companies Holding Boiler and Pressure Vessel Certificates of Authorization for Use of Code Symbol Stamps—1979 Edition (With Winter 1979 Supplement), Book No. E00052, L-\$35.00, M-\$28.00  
Companies Holding Nuclear Certificates of Authorization (One Year Subscription-Issued bimonthly), Book No. E00061, L-\$45.00, M-\$36.00  
Criteria for Design of Elevated Temperature Class 1 Components in Section III, Division 1, of the ASME Boiler and Pressure Vessel Code, 1976, Book No. E00097, L-\$20.00, M-\$16.00  
Criteria of the ASME Boiler & Pressure Vessel Code for Design by Analysis Sections III & VII, Div. 2, 1969, Book No. 100059, L-\$1.50, M-\$1.20  
History of the ASME Boiler Code, 1955, Book No. G00028, L-\$10.00, M-\$8.00  
Interpretations of the ASME Boiler and Pressure Code, Book No. E00098, 3 Year Subscription (6 issues) L-\$75.00, M-\$60.00, Back Copies Available L-\$20.00, M-\$16.00  
Proposed Section XI—Division 2, Rules for Inspection and Testing of Components of Gas-Cooled Plants with Supplement I, Book No. E00122, L-\$32.00, M-\$25.60  
Supplement I to Proposed Section XI, Division 2, Book No. E12201, L-\$4.00, M-\$3.20  
Proposed Section XI—Division 3, Rules for Inspection and Testing of Components of Liquid Metal Cooled Plants, Book No. E00123, L-\$15.00, M-\$12.00  
Proposed Standard for Acoustic Emission Examinations During Application of Pressure, 1975, Book No. E00096, L-\$2.50, M-\$2.00  
Sample Analysis of a Piping System: Class I Nuclear, 1972, Book No. E00063, L-\$4.50, M-\$3.60

## ASME CODES

### Performance Test Codes

Test methods prescribed in the PTC's enable users to obtain accurate information on adaptability of equipment, best methods of operation, capacity and efficiency, and verification of manufacturer's guarantees. Each one contains a check list of items on which agreement should be reached before starting tests, specifies the instruments and testing apparatus needed, lists precautions, gives instructions for computing and tabulating results and shows how to correct results for deviations from specified test conditions.

The Performance Test Codes Committee is following a policy of submitting the PTC Documents to ANSI for approval as American National Standards. The documents that have been approved bear the ANSI/ASME designation. This PTC/ANSI relationship will reduce duplication of effort and promote the consensus standards concept.

ANSI	ASME	
PTC 1-1974	PTC 1-1970	General Instructions (With 1971 Addenda), Book No. C00017, L-\$5.00, M-\$4.00
PTC 2-1974	PTC 2-1971	Code on Definitions and Values, Book No. C00007, L-\$5.50, M-\$4.40
PTC 3.1-1974	PTC 3.1-1958	(R 1979) Diesel and Burner Fuels, Book No. D00024, L-\$10.00, M-\$8.00
PTC 3.2-1974	PTC 3.2-1954	(R 1979) Solid Fuels, Book No. C00023, L-\$5.50, M-\$4.40
PTC 3.3-1974	PTC 3.3-1969	Gaseous Fuels, Book No. D00038, L-\$9.00, M-\$7.20
PTC 4.1-1974	PTC 4.1-1964	(R 1973) Steam-Generating Units (With 1968 and 1969 Addenda), Book No. C00025, L-\$10.00, M-\$8.00
		Diagram for Testing of a Steam Generator, Figure 1 (Pad of 100), Book No. C00038, L-\$6.00, M-\$6.00
		Heat Balance of a Steam Generator, Figure 2 (Pad of 100), Book No. C00039, L-\$6.00, M-\$6.00
	PTC 4.1a-1964	ASME Test Form for Abbreviated Efficiency Test—Summary Sheet (Pad of 100), Book No. C00036, L-\$6.00, M-\$6.00

ANSI	ASME	
	PTC 4.1b-1964	(R 1965) ASME Test Form for Abbreviated Efficiency Test—Calculation Sheet (Pad of 100), Book No. C00037, L-\$6.00, M-\$6.00
PTC 4.2-1974	PTC 4.2-1969	Coal Pulverizers, Book No. C00006, L-\$4.50, M-\$3.60
PTC 4.3-1974	PTC 4.3-1968	(R 1979) Air Heaters, Book No. D00034, L-\$7.00, M-\$5.60
	PTC 5-1949	Reciprocating Steam Engines, Book No. C00022, L-\$2.75, M-\$2.20
PTC 6-1976	PTC 6-1976	Steam Turbines, Book No. C00028, L-\$15.00, M-\$12.00
Appendix to ANSI PTC 6-1974	PTC 6A-1964	(R 1973) Appendix A to Test Code for Steam Turbines (With 1968 Addenda), Book No. C00029, L-\$6.50, M-\$5.20
PTC 6 Report-1974	PTC 6 Report-1969	(R 1979) Guidance for Evaluation of Measurement Uncertainty in Performance Tests of Steam Turbines, Book No. D00041, L-\$5.00, M-\$4.00
PTC 6S Report-1974	PTC 6S Report-1970	(R 1979) Simplified Procedures for Routine Performance Tests of Steam Turbines, Book No. D00042, L-\$11.00, M-\$8.80
	PTC 7-1949	(R 1969) Reciprocating Steam-Driven Displacement Pumps, Book No. C00021, L-\$2.50, M-\$2.00
	PTC 7.1-1962	(R 1969) Displacement Pumps, Book No. D00026, L-\$4.00, M-\$3.20
	PTC 8.2-1965	Centrifugal Pumps (With 1973 Addenda), Book No. C00005, L-\$5.00, M-\$4.00
PTC 9-1974	1973 Addendum to PTC 8.2-1965 PTC 9-1970	Centrifugal Pumps, Book No. C00002, L-\$1.25, M-\$1.00
	PTC 10-1965	(R 1979) Displacement Compressors, Vacuum Pumps and Blowers (With 1972 Errata), Book No. C00009, L-\$8.00, M-\$6.40
PTC 10-1974	PTC 10-1965	(R 1979) Compressors and Exhausters, Book No. C00004, L-\$8.00, M-\$6.40
PTC 12.1-1978	PTC 12.1-1978	Closed Feedwater Heaters, Book No. C00013, L-\$7.50, M-\$5.60
PTC 12.2-1975	PTC 12.2-1955	(R 1975) Steam Condensing Apparatus, Book No. C00026, L-\$8.00, M-\$6.40
PTC 12.3-1977	PTC 12.3-1977	Deaerators, Book No. D00023, L-\$10.00, M-\$8.00
PTC 14-1974	PTC 14-1970	Evaporating Apparatus, Book No. C00011, L-\$5.00, M-\$4.00
PTC 16-1974	PTC 16-1958	(R 1971) Gas Producers and Continuous Gas Generators, Book No. C00014, L-\$5.50, M-\$4.40
PTC 17-1974	PTC 17-1973	Reciprocating Internal-Combustion Engines, Book No. C00020, L-\$7.50, M-\$6.00
	PTC 18-1949	Hydraulic Prime Movers, Book No. C00018, L-\$5.00, M-\$4.00
PTC 18.1-1978	PTC 18.1-1978	Pumping Mode of Pump Turbines, Book No. C00044, L-\$15.00, M-\$12.00
PTC 20.1-1977	PTC 20.1-1977	Speed and Load-Governing Systems for Steam Turbine-Generator Units, Book No. C00019, L-\$12.00, M-\$9.60
	PTC 20.2-1965	Overspeed Trip Systems for Steam Turbine-Generator Units, Book No. C00041, L-\$5.00, M-\$4.00
PTC 20.3-1974	PTC 20.3-1970	Pressure Control Systems Used on Steam Turbine Generator Units, Book No. C00027, L-\$9.00, M-\$7.20
	PTC 21-1941	Dust Separating Apparatus, Book No. D00021, L-\$4.00, M-\$3.20
PTC 22-1974	PTC 22-1966	(R 1979) Gas Turbine Power Plants, Book No. C00015, L-\$8.00, M-\$6.40
	PTC 23-1958	Atmospheric Water Cooling Equipment, Book No. D00022, L-\$6.00, M-\$4.80
PTC 24-1976	PTC 24-1976	Ejectors, Book No. C00010, L-\$7.50, M-\$6.00
PTC 25.3-1976	PTC 25.3-1976	Safety and Relief Valves, Book No. D00031, L-\$13.00, M-\$10.40
	PTC 26-1962	1977 Addendum to ANSI/ASME PTC 25.3-1976 Safety and Relief Valves, Book No. D00032, L-\$1.00, M-\$0.80
	PTC 27-1957	Speed Governing Systems for Internal Combustion Engine-Generator Units, Book No. D00027, L-\$4.00, M-\$3.20
		Determining Dust Concentration in a Gas Stream, Book No. C00008, L-\$50.00, M-\$40.00

ANSI	ASME	
PTC 28-1974	PTC 28-1965	(R 1973) Determining the Properties of Fine Particulate Matter, Book No. D00030, L-\$6.00, M-\$4.80
	PTC 29-1965	Speed-Governing Systems for Hydraulic Turbine-Generator Units, Book No. C00040, L-\$5.75, M-\$4.60
PTC 31-1974	PTC 31-1973	Ion Exchange Equipment, Book No. C00016, L-\$6.00, M-\$4.80
PTC 32.1-1974	PTC 32.1-1969	Nuclear Steam Supply Systems, Book No. C00012, L-\$6.50, M-\$5.20
	New PTC 32.2 Report-1978	Methods of Measuring The Performance of Nuclear Reactor Fuel In Light Water Reactors, Book No. C00045, L-\$6.00, M-\$4.80
	New PTC 33-1978	Large Incinerators Book No. C00046, L-\$20.00, M-\$16.00

#### PTC Supplements on Instruments and Apparatus

	PTC 19.2-1964	Pressure Measurement, Book No. D00029, L-\$9.00, M-\$7.20
PTC 19.3-1974	PTC 19.3-1974	Temperature Measurement, Book No. C00035, L-\$16.00, M-\$12.80
	PTC 19.5-1972	Application, Part II of Fluid Meters: Interim Supplement on Instruments and Apparatus, Book No. G00018, L-\$14.00, M-\$11.20
	PTC 19.5.1-1964	Weighing Scales, Book No. D00028, L-\$5.00, M-\$4.00
	PTC 19.6-1955	Electrical Measurements in Power Circuits, Book No. D00007, L-\$7.00, M-\$5.60
	PTC 19.7-1961	Measurement of Shaft Horsepower, Book No. D00009, L-\$5.00, M-\$4.00
PTC 19.8-1974	PTC 19.8-1970	Measurement of Indicated Horsepower, Book No. D00008, L-\$5.50, M-\$4.40
PTC 19.10-1974	PTC 19.10-1968	Flue and Exhaust Gas Analyses, Book No. C00031, L-\$5.50, M-\$4.40
PTC 19.11-1974	PTC 19.11-1970	Water and Steam in the Power Cycle (Purity and Quality, Leak Detection and Measurement), Book No. D00011, L-\$9.00, M-\$7.20
	PTC 19.12-1958	Measurement of Time, Book No. D00012, L-\$2.75, M-\$2.20
	PTC 19.13-1961	Measurement of Rotary Speed, Book No. D00013, L-\$5.00, M-\$4.00
	PTC 19.14-1958	Linear Measurements, Book No. D00014, L-\$3.50, M-\$2.80
	PTC 19.16-1965	Density Determinations of Solids and Liquids, Book No. D00016, L-\$3.75, M-\$3.00
	PTC 19.17-1965	Determination of the Viscosity of Liquids, Book No. D00017, L-\$4.00, M-\$3.20
	(Not a PTC)	The Philosophy of Power Test Codes and Their Development, Book No. H00056, L-\$2.50, M-\$2.00
		Binders for Performance Test Codes—Blue Cloth, 8-1/2 X 11 with rods, Book No. C00003, L-\$7.50, M-\$6.00

#### ASME Standards Turbine Lubrication, Gas Piping & Safety

- No. 101 Operation and Flow Process Charts 1972, (Also an ANSI Standard—Y15.3-1974, see p. 20) Book No. L00017, L-\$4.00, M-\$3.20
- No. 102 Form for Use in Self-Appraisal of Industrial Plants 1947, Book No. M00001, L-\$2.75, M-\$2.20
- No. 104 One-Piece Metallic Piston Rings 1954, Book No. L00016, L-\$2.25, M-\$1.80
- No. 111 Recommended Practices for the Design of Marine Propulsion Turbine Lubricating Systems 1960, Book No. J00036, L-\$2.25, M-\$1.80
- No. 112 Diaphragm Actuated Control Valve Terminology 1961, Book No. L00036, L-\$2.25, M-\$1.80
- No. 113 Recommended Practices for the Flushing and Cleaning of Marine Propulsion Turbine Lubricating Systems 1964, Book No. M00051, L-\$2.25, M-\$1.80
- No. 114 Recommended Practices for the Design of Marine Propulsion Turbine Lubricating Oil 1964, Book No. M00052, L-\$2.25, M-\$1.80
- No. 115 Recommended Practices for the Design, Operation and Maintenance of Marine Auxiliary Machinery Lubricating Systems 1968 (Includes ASME Standards No. 115A (Design Section only) Recommended Practices for the Design of Steam Turbine Driven Generator Lubricating Systems; 115B Recommended Practices for the Design of Marine Steam Turbine Driven Boiler Feed Pumps Lubricating Systems; 115C Recommended Practices for the Design of Marine Steam Turbine Driven Blowers Lubricating Systems), Book No. K00046, L-\$4.00, M-\$3.20
- No. 115D Recommended Practices or the Design of Lubricating Systems for Marine Steam Turbine Pumps for Various Ships Services 1969, Book No. K00059, L-\$2.75, M-\$2.20
- No. 116 Recommended Practices for the Design of Steam Turbine Generator Oil Systems 1968, Book No. K00047, L-\$2.75, M-\$2.20

- No. 117 Recommended Practices for the Cleaning of Steam Turbine Generator Oil Systems 1968, Book No. K00048, L-\$2.75, M-\$2.20
- No. 118 Recommended Practices for the Purification of Steam Turbine Generator Oil 1968, Book No. K00049, L-\$2.75, M-\$2.20
- No. 119 Recommended Practices for the Flushing and Cleaning of Marine Auxiliary Machinery Lubricating Systems 1968, Book No. K00050, L-\$2.75, M-\$2.20
- No. 120 Recommended Practices for the Design of Gas Turbine Generator Lubricating Oil Systems 1969, Book No. K00058, L-\$2.75, M-\$2.20
- No. 121 Recommended Practices for the Purification of Lubricating Oil in Marine Steam Turbine Driven Auxiliary Machinery 1969, Book No. K00060, L-\$2.75, M-\$2.20
- CSD-1 ASME Safety Code—Controls and Safety Devices for Automatically Fired Boilers, Book No. A00091, L-\$7.50, M-\$6.00
- LOS-2C1 ASTM-ASME Recommended Practices for the Flushing and Cleaning of Lubricating Systems of Various Turbine Driven Pumps for Marine Service, Book No. K00062, L-\$3.50, M-\$2.80
- LOS-4C1 ASTM-ASME Recommended Practices for Flushing and Cleaning of Gas Turbine Generator Lubricating Oil Systems, Book No. K00063, L-\$3.50, M-\$2.80
- LOS-5C1 ASTM-ASME Recommended Practices for the Flushing and Cleaning of Oil Systems for Lubrication and Control of Hydroelectric Equipment, Book No. K00065, L-\$3.50, M-\$2.80
- LOS-5D1 ASTM-ASME Recommended Practices for the Design of Oil Systems for Lubrication and Control of Hydroelectric Equipment, Book No. K00068, L-\$3.50, M-\$2.80
- LOS-5P1 ASTM-ASME Recommended Practice for the Purification of Oil Systems for Lubrication and Control of Hydroelectric Equipment, Book No. K00064, L-\$3.50, M-\$2.80
- TWDPS-1 Part 1. Recommended Practices for the Prevention of Water Damage to Steam Turbines Used for Electric Power Generation: Part I—Fossil Fueled Plants 1972, Book No. K00066, L-\$4.00, M-\$3.20
- TWDPS-1 Part 2. Recommended Practices for the Prevention of Water Damage to Steam Turbines Used for Electric Power Generation: Part II—Nuclear Fueled Plants 1973, Book No. K00072, L-\$4.00, M-\$3.20
- Draft ASME Code for Pumps and Valves for Nuclear Power 1968 (With 1970 Addenda), Book No. N00047, L-\$5.50, M-\$4.40
- Addenda only, Book No. N00050, L-\$2.25, M-\$1.80
- ASME Guide for Gas Transmission and Distribution Piping Systems—1980 (Including all Addenda through December 1982), Book No. A00030, L-\$10.00, M-\$8.00
- Binder for Gas Guide, Book No. A00028, L-\$7.50, M-\$6.00

## BOOKS AND REPORTS

### Aerospace

- Annals of Reliability and Maintainability, Book No. H00025, L-\$25.00, M-\$12.50
- Integrated Design and Analysis of Aerospace Structures, Book No. G00096, L-\$12.00, M-\$6.00
- Measurement and Prediction of Structural and Biodynamic Crash-Impact Response, Book No. G00107, L-\$20.00, M-\$10.00
- Modern Developments In Composite Materials and Structures, Book No. G00154, L-\$40.00, M-\$20.00
- Proceedings of 1979 Annual Reliability and Maintainability Symposium, Book No. 100121, L-\$18.00, M-\$9.00
- 1968 Reliability and Maintainability Conference Proceedings - "Annals of Assurance Sciences," Book No. 100053, L-\$27.00, M-\$13.50
- Reliability and Maintainability (Reprinted From Mechanical Engineering), Book No. H00054, L-\$2.00, M-\$1.00
- Space Systems and Thermal Technology for the 70's Aviation & Space Papers - Part I, Book No. 100073, L-\$45.00, M-\$22.50
- Structural Dynamic Aspects of Bladed-Disk Assemblies, Book No. H00098, L-\$14.00, M-\$7.00

### Air Pollution

- Ambient Air Quality Standards - Here We Are, What Do We Do?, Book No. 100099, L-\$30.00, M-\$15.00
- Cooling Tower Plume Modeling and Drift Measurement - A Review of the State-of-the-Art, Book No. H00088, L-\$25.00, M-\$12.50
- Recommended Guide for the Prediction of the Dispersion of Airborne Effluents - Third Edition, Book No. H00037, L-\$10.00, M-\$5.00

### Applied Mechanics

- Applications of Holography in Mechanics, Book No. H00040, L-\$7.50, M-\$3.75
- Applications of Numerical Methods to Forming Processes, - AMD Vol. 28, Book No. H00111, L-\$30.00, M-\$15.00
- Applied Mechanics Aspects of Nuclear Effects in Materials, Book No. H00073, L-\$20.00, M-\$10.00
- Boundary-Integral Equation Method: Computational Applications In Applied Mechanics, AMD Vol. 11, Book No. 100089, L-\$14.00, M-\$7.00
- Computational Approaches In Applied Mechanics, Book No. 100067, L-\$19.50, M-\$9.75
- Computational Techniques for Interface Problems, AMD Vol. 30, Book No. H00113, L-\$24.00, M-\$12.00
- Computing In Applied Mechanics, AMD Vol. 18, Book No. 100108, L-\$20.00, M-\$10.00
- Computing Methods In Geophysical Mechanics, AMD Vol. 25, Book No. 100113, L-\$22.00, M-\$11.00
- Constitutive Equations In Viscoplasticity: Computational And Engineering Aspects, AMD Vol. 20, Book No. 100106, L-\$20.00, M-\$10.00
- Constitutive Equations In Viscoplasticity: Phenomenological And Physical Aspects, AMD Vol. 21, Book No. 100107, L-\$14.00, M-\$7.00
- Dynamic Response of Biomechanical Systems, Book No. G00075, L-\$15.00, M-\$7.50
- Dynamics of Composite Materials, Book No. H00078, L-\$12.00, M-\$6.00
- Dynamics Of Structured Solids, Book No. H00004, L-\$7.00, M-\$3.50
- Effects Of Voids On Material Deformation, AMD Vol. 16, Book No. 100101, L-\$20.00, M-\$10.00
- Elastic Waves And Non-Destructive Testing Of Materials, AMD Vol. 29, Book No. H00112, L-\$24.00, M-\$12.00
- Finite Elasticity, AMD Vol. 27, Book No. 100116, L-\$20.00, M-\$10.00



Finite Element Analysis of Transient Nonlinear Structural Behavior, AMD Vol. 14, Book No. 100094, L-\$20.00, M-\$10.00

Finite Element Methods For Convection Dominated Flows, AMD Vol. 34, Book No. G00151, L-\$30.00, M-\$15.00

Fluid-Solid Interaction, Book No. G00059, L-\$13.50, M-\$6.75

Inelastic Behavior of Composite Materials, AMD Vol. 13, Book No. 100093, L-\$20.00, M-\$10.00

Isolation Of Mechanical Vibration, Impact and Noise, AMD Vol. 1, Book No. G00047, L-\$25.00, M-\$12.50

Mechanics And Sport, AMD Vol. 4, Book No. H00007, L-\$25.00, M-\$12.50

Mechanics Applied To The Transport Of Bulk Materials, AMD Vol. 31, Book No. G00146, L-\$20.00, M-\$10.00

Mechanics Of Biomaterials, AMD Vol. 33, Book No. G00150, L-\$18.00, M-\$9.00

Mechanics Of Transportation Suspension Systems, AMD Vol. 15, Book No. 100095, L-\$12.00, M-\$6.00

The Mechanics Of Viscoelastic Fluids, AMD Vol. 22, Book No. 100110, L-\$20.00, M-\$10.00

1973 Biomechanics Symposium, AMD Vol. 2, Book No. G00033, L-\$12.00, M-\$6.00

1977 Biomechanics Symposium, AMD Vol. 23, Book No. 100111, L-\$30.00, M-\$15.00

1979 Biomechanics Symposium, AMD Vol. 32, Book No. G00142, L-\$30.00, M-\$15.00

Nonlinear And Dynamic Fracture Mechanics, AMD Vol. 35, Book No. G00152, L-\$30.00, M-\$15.00

Numerical Solutions Of Nonlinear Problems, AMD Vol. 6, Book No. H00036, L-\$20.00, M-\$10.00

Passenger Vibration In Transportation Vehicles, AMD Vol. 24, Book No. 100112, L-\$15.00, M-\$7.50

1975 Biomechanics Symposium, AMD Vol. 10, Book No. 100090, L-\$16.00, M-\$8.00

Proceedings of the U.S. National Congress of Applied Mechanics

7th Edition—1974, Book No. G00085, L-\$25.00, M-\$12.50

6th Edition—1970, Book No. G00078, L-\$12.50, M-\$6.25

4th Edition—1962, Book No. H00025, L-\$44.00, M-\$22.00

Propagation of Shock Waves in Solids - AMD Vol. 17, Book No. 100102, L-\$16.00, M-\$8.00

Reliability Design For Vibroacoustic Environments-AMD Vol. 9, Book No. 100047, L-\$18.00, M-\$9.00

Rock Mechanics Symposium - AMD Vol. 3, Book No. 100012, L-\$12.50, M-\$6.25

Structural Optimizations Symposium - AMD Vol. 7, Book No. 100042, L-\$18.00, M-\$9.00

Surface Crack: Physical Problems and Computational Solutions, Book No. H00029, L-\$20.00, M-\$10.00

Surface Mechanics, Book No. G00013, L-\$13.00, M-\$6.50

Surveys of Research in Transportation Technology, Book No. H00006, L-\$18.00, M-\$9.00

Survival of Mechanical Systems In Transient Environments, Book No. G00153, L-\$24.00, M-\$12.00

Synthesis of Vibrating Systems, Book No. H00072, L-\$15.00, M-\$7.50

System Identification of Vibrating Structures: Mathematical Models from Test Data, Book No. 100005, L-\$20.00, M-\$10.00

Use of Models and Scaling in Shock and Vibration, Book No. 100010, L-\$7.00, M-\$3.50

Vibration Testing - Instrumentation and Data Analysis - AMD Vol. 12, Book No. 100091, L-\$14.00, M-\$7.00

## Bioengineering

1974 Advances in Bioengineering, Book No. H00077, L-\$18.00, M-\$9.00

1975 Advances in Bioengineering, Book No. G00097, L-\$12.00, M-\$6.00

1976 Advances in Bioengineering, Book No. G00105, L-\$7.00, M-\$3.50

1977 Advances in Bioengineering, Book No. H00103, L-\$16.00, M-\$8.00

1978 Advances in Bioengineering, Book No. H00114, L-\$20.00, M-\$10.00

1979 Advances in Bioengineering, Book No. G00155, L-\$24.00, M-\$12.00

1967 Biomechanical Human Factors, Book No. G00050, L-\$9.50, M-\$4.75

Biomechanics, Book No. H00061, L-\$10.50, M-\$5.25

## Computer Technology

Case Studies in Computer Control, Book No. H00117, L-\$18.00, M-\$9.00

Computer Aided Design of Bearing and Seals, Book No. G00108, L-\$10.00, M-\$5.00

Interactive Computer Graphics in Engineering, Book No. G00118, L-\$8.00, M-\$4.00

## Controls

Control of Distributed Parameter Systems, Book No. G00032, L-\$5.00, M-\$2.50

Differential Games: Theory and Applications, Book No. G00066, L-\$6.00, M-\$3.00

Dynamics of Automatic Controls, Book No. G00014, L-\$7.00, M-\$3.50

Identification of Parameters in Distributed Systems, Book No. 100019, L-\$7.00, M-\$3.50

1970 Joint Automatic Control Conference, Book No. 100069, L-\$30.00, M-\$15.00

1976 Joint Automatic Control Conference - Productivity, Book No. 100103, L-\$50.00, M-\$25.00

Learning Systems, Book No. G00065, L-\$6.00, M-\$3.00

Nonlinear Analysis and Synthesis: Vol. 1, Fundamental Principles, Book No. G00138, L-\$15.00, M-\$7.50

Single Perturbations: Order Reduction in Control System Design, Book No. G00070, L-\$4.50, M-\$2.25

Stochastic Problems in Control, Book No. 100038, L-\$6.00, M-\$3.00

Stochastic Processes in Dynamical Problems, Book No. G00016, L-\$13.00, M-\$6.50

## Design

Advances In Reliability And Stress Analysis, Book No. H00119, L-\$30.00, M-\$15.00

Composite Materials in the Automobile Industry, Book No. H00115, L-\$30.00, M-\$15.00

Design Engineering Conference, 1960, Book No. 100035, L-\$6.00, M-\$3.00

Design For Elevated Temperature Environment, 1971, Book No. G00035, L-\$7.50, M-\$3.75

Design Technology Transfer, 1974, Book No. H00017, L-\$40.00, M-\$20.00

Designing For High Impact Technology, 1967, Book No. G00048, L-\$3.50, M-\$1.75

Failure Prevention and Reliability, 1977, Book No. H00101, L-\$30.00, M-\$15.00

Finite Element Applications in Vibration Problems, 1977, Book No. H00102, L-\$16.00, M-\$8.00

Flexible Rotor-Bearing System Dynamics:

Part II—Bearing Influence and Representation in Rotor Dynamics Analysis, 1972, Book No. H00046, L-\$3.50, M-\$1.75

Part III—Unbalance Response and Balancing of Flexible Rotors in Bearing, 1973, Book No. H00048, L-\$4.00, M-\$2.00

New Design Standards for Flexible Couplings, 1966, Book No. H00050, L-\$3.50, M-\$1.75

Physics of Fiber Contact, 1970, Book No. G00067, L-\$4.00, M-\$2.00

Theory Of Machines And Mechanisms-(Available As A Set Only) 1979

Vol. 1—Book No. G00148

Vol. 2—Book No. G00149, L-\$75.00, M-\$37.50

## Fluids

Advances In Fluidics (With Discussion Booklet), Book No. G00044, L-\$22.00, M-\$11.00

Discussions only, Book No. H00008, L-\$2.00, M-\$1.00

Application - Part II of Fluid Meters: Interim Supplement 19.5 on Instruments and Apparatus, Book No. G00018, L-\$14.00, M-\$7.00

Applications of Fluid Mechanics to Wind Engineering, Book No. G00018, L-\$3.50, M-\$1.75

Cavitation Forum—1970 (With Discussion Booklet), Book No. 100071, L-\$5.50, M-\$2.75

Cavitation Forum—1971, Book No. 100002, L-\$5.50, M-\$2.75

Cavitation and Polyphase Flow Forum—1977 Book No. 100109, L-\$8.00, M-\$4.00

Cavitation and Polyphase Flow—1978, Book No. 100120, L-\$8.00, M-\$4.00

Cavitation And Polyphase Flow Forum—1979, Book No. G00143, L-\$4.00, M-\$2.00

Cavitation in Fluid Machinery, Book No. H00043, L-\$16.00, M-\$8.00

Cavitation Research Facilities and Techniques (Including Discussions), Book No. 100044, L-\$12.50, M-\$6.25

Discussions only, Book No. 100052, L-\$2.00, M-\$1.00

Cavitation State of Knowledge (With Discussion Booklet), Book No. 100013, L-\$18.50, M-\$9.25

Discussions only, Book No. 100025, L-\$2.50, M-\$1.25

Cavity Flows, Book No. 100085, L-\$15.00, M-\$7.50

Centrifugal Compressor and Pump Stability, Stall and Surge, Book No. 100098, L-\$20.00, M-\$10.00

Condensation in High Speed Flows, Book No. G00119, L-\$16.00, M-\$8.00

Cost of Inefficiency in Fluid Machinery, Book No. 100086, L-\$10.00, M-\$5.00

Flow In Primary, Non-Rotating Passages In Turbomachines, Book No. G00165, L-\$30.00, M-\$15.00

Flow Studies in Air and Water Pollution, Book No. 100001, L-\$22.00, M-\$11.00

Fluid Mechanics in the Petroleum Industry, Book No. G00093, L-\$10.00, M-\$5.00

Fluid Mechanics of Combustion, Book No. 100034, L-\$20.00, M-\$10.00

Fluid Mechanics of Mixing, Book No. 100033, L-\$20.00, M-\$10.00

Fluid Meters, Their Theory and Application - Sixth Edition, Book No. G00079, L-\$20.00, M-\$10.00

Fluids Engineering in Advanced Energy Systems, Book No. H00122, L-\$30.00, M-\$15.00

Fluid Transients and Acoustics in the Power Industry, Book No. H00120, L-\$40.00, M-\$20.00

International Symposium On Cavitation Inception, Book No. G00156, L-\$30.00, M-\$15.00

Measurement in Unsteady Flow, Book No. H00041, L-\$8.50, M-\$4.25

Measurements in Polyphase Flows, Book No. H00121, L-\$20.00, M-\$10.00

Multi-Phase Flow Symposium, Book No. H00032, L-\$7.50, M-\$3.75

Polyphase Flow in Turbomachinery, Book No. H00123, L-\$40.00, M-\$20.00

Pump Turbine Schemes: Planning, Design, and Operation, Book No. G00144, L-\$24.00, M-\$12.00

Role of Nucleation in Boiling and Cavitation (With Discussion Booklet), Book No. 100072, L-\$22.00, M-\$11.00

Discussions only, Book No. 100078, L-\$2.00, M-\$1.00

Topics in Fluid Film Bearing and Rotor Systems Design and Optimization, Book No. 100118, L-\$30.00, M-\$15.00

Turbulent Boundary Layers, Book No. G00145, L-\$30.00, M-\$15.00

Water Hammer, Book No. 100007, L-\$5.00, M-\$2.50

## Heat Transfer

Advances In Enhanced Heat Transfer, Book No. 100122, L-\$24.00, M-\$12.00

Advances in Heat and Mass Transfer at Air-Water Interfaces, Book No. H00127, L-\$18.00, M-\$9.00

Advances in Thermophysical Properties at Extreme Temperatures and Pressures, 1965, Book No. 100055, L-\$19.00, M-\$9.50

Augmentation of Convective Heat and Mass Transfer, 1970, Book No. G00076, L-\$21.00, M-\$10.50

Cogeneration District Heating Applications, Book No. H00128, L-\$7.00, M-\$3.50

Condensation Heat Transfer, Book No. 100123, L-\$18.00, M-\$9.00

Dry and Wet/Dry Cooling Towers for Power Plants—Vol. 6, 1973, Book No. H00015, L-\$14.50, M-\$7.25

Environmental Effects of Atmospheric Heat/Moisture Releases (Cooling Towers, Cooling Ponds, and Area Sources), Book No. H00100, L-\$18.00, M-\$9.00

Environmental Effects of Thermal Discharges—The Elements of Formulating a Rational Public Policy, 1970, Book No. G00073, L-\$8.00, M-\$4.00

Fifth Symposium on Thermophysical Properties, 1970, Book No. G00068, L-\$19.00, M-\$9.50

Fluid Flow And Heat Transfer Over Rod Or Tube Bundles, Book No. G00157, L-\$30.00, M-\$15.00

Fourth Symposium on Thermophysical Properties, 1968, Book No. 100018, L-\$25.00, M-\$12.50

Gas Turbine Heat Transfer - 1978, Book No. H00125, L-\$18.00, M-\$9.00

Heat Transfer in Energy Conservation, 1977, Book No. H00106, L-\$18.00, M-\$9.00

Heat Transfer in Rod Bundles, 1968, Book No. H00003, L-\$8.50, M-\$4.25

Heat Transfer in Solar Energy Systems, 1977, Book No. H00104, L-\$20.00, M-\$10.00

The Interrelationships Between Codes, Standards, and Customer Specifications For Process Heat Transfer Equipment, Book No. G00159, L-\$7.00, M-\$3.50

Liquid-Metal Heat Transfer and Fluid Dynamics, 1970, Book No. G00077, L-\$23.50, M-\$11.75

Nonequilibrium Interfacial Transport Processes, Book No. H00124, L-\$18.00, M-\$9.00

Non-Equilibrium Two-Phase Flows, 1975, Book No. G00094, L-\$10.00, M-\$5.00

Nuclear Reactor Safety Heat Transfer, 1977, Book No. H00105, L-\$12.00, M-\$6.00

Proceedings of the Seventh Symposium on Thermophysical Properties, Book No. G00133, L-\$90.00, M-\$60.00

Progress in Int'l Research on Thermodynamic and Transport Properties, 1962, Book No. G00039, L-\$24.00, M-\$12.00

Recent Developments in Thermophysical Properties Research—Vol. 3, 1971, Book No. H00069, L-\$3.50, M-\$1.75

Sixth Symposium on Thermophysical Properties, 1973, Book No. G00046, L-\$24.50, M-\$12.25

Spent Nuclear Fuel Heat Transfer—Vol. 2, 1971, Book No. H00068, L-\$6.00, M-\$3.00

Survey of Nucleonic Heat Transfer—Vol. 1, 1971, Book No. H00067, L-\$5.00, M-\$2.50

Symposium on the Thermal and Hydraulic Aspects of Nuclear Reactor Safety  
 Volume 1—Light Water Reactors, 1977, Book No. G00127, L-\$25.00, M-\$20.00  
 Volume 2—Liquid Metal Fast Breeder Reactors, 1977, Book No. G00128, L-\$25.00, M-\$20.00  
 Thermal Problems in Biotechnology, 1968, Book No. G00051, L-\$7.50, M-\$3.75  
 Topics in Two-Phase Heat Transfer and Flow, Book No. H00129, L-\$30.00, M-\$15.00  
 Transport Phenomena in Atmospheric and Ecological Systems, 1967, Book No. G00061, L-\$3.50, M-\$1.75  
 Two-Phase Flow & Heat Transfer in Rod Bundles, 1969, Book No. H00027, L-\$11.00, M-\$5.50  
 Two Phase Flow Instrumentation, 1969, Book No. H00016, L-\$9.50, M-\$4.75

## Lubrication

Assessment of Lubricant Technology, 1972, Book No. G00001, L-\$20.00, M-\$10.00  
 Bearing and Seal Design in Nuclear Power Machinery, 1967, Book No. G00056, L-\$22.00, M-\$11.00  
 Boundary Lubrication—An Appraisal of World Literature, 1969, Book No. G00005, L-\$33.50, M-\$16.75  
 Diagnosing Machinery Health, Book No. H00130, L-\$8.00, M-\$4.00  
 Energy Conservation Through Fluid Film Lubrication Technology: Frontiers in Research and Design 1979, Book No. G00160, L-\$30.00, M-\$15.00  
 Fundamentals of the Design of Fluid Film Bearings 1979, Book No. H00145, L-\$24.00, M-\$12.00  
 Gas Lubrication (by V. N. Constantinescu), Translation from Rumanian, 1969, Book No. G00015, L-\$19.50, M-\$9.75  
 Loss Prevention of Rotating Machinery, 1972, Book No. G00017, L-\$7.50, M-\$3.75  
 PTFE Seals in Reciprocating Compressors—An ASME Design Manual, 1975, Book No. H00082, L-\$15.00, M-\$7.50  
 Strategy for Energy Conservation Through Tribology, Book No. H00109, L-\$15.00, M-\$7.50

## Management

Effective Management of Engineering Resources, 1975, Book No. H00095, L-\$6.00, M-\$3.00  
 Engineer's Responsibility to Society, 1969, Book No. H00009, L-\$4.00, M-\$2.00  
 Fifty Years Progress in Management 1910-1960, Book No. H00011, L-\$14.00, M-\$7.00  
 Frank Gilbreth Centennial, 1969, Book No. H00043, L-\$6.00, M-\$3.00  
 Impact of Competitive Technology on Engineering Management, 1973, Book No. H00051, L-\$5.00, M-\$2.50  
 International Impact on Engineering Managers, 1965, Book No. H00064, L-\$6.00, M-\$3.00  
 International Patterns of Engineering Management—A Constructive Analysis, 1974, Book No. H00055, L-\$6.00, M-\$3.00  
 Managing Engineering Manpower, 1967, Book No. G00057, L-\$5.00, M-\$2.50  
 Unwritten Laws of Engineering, 1944, Book No. H00006, L-\$1.00, M-\$0.50

## Materials

Analysis of Data from Symposium on Heat-Treated Steels for Elevated Temperature Service, 1967, Book No. G00045, L-\$3.50, M-\$1.75  
 Applications of Materials For Pressure Vessels and Piping MPC-10, 1979, Book No. H00146, L-\$30.00, M-\$15.00  
 ASME Handbook—Engineering Tables, 1956, Book No. G00021, L-\$41.50, M-\$23.20  
 ASME Handbook: Metals Engineering—Design, 1965, Book No. H00001, L-\$41.50, M-\$23.20  
 ASME Handbook: Metals Engineering—Processes, 1958, Book No. H00023, L-\$26.25, M-\$12.00  
 ASME Handbook: Metals Engineering—Properties, 1954, Book No. H00002, L-\$34.75, M-\$17.80  
 1976 ASME-MPC Symposium on Creep-Fatigue Interaction, Series MPC-3, 1976, Book No. G00112, L-\$45.00, M-\$22.50  
 Behavior of Superalloys in High Temperature, High Pressure Steam, 1968, Book No. H00014, L-\$7.00, M-\$3.50  
 Cast Metals For Structural and Pressure Containment Application MPC-11, Book No. G00161, L-\$50.00, M-\$25.00  
 Characterization of Materials for Service at Elevated Temperatures, Series MPC-7, Book No. G00134, L-\$50.00, M-\$25.00  
 Chrome-Moly Steel in 1976, Series MPC-4, 1976, Book No. G00113, L-\$16.00, M-\$8.00  
 Ductility and Toughness Considerations in Elevated Temperature Service, Series MPC-8, Book No. H00132, L-\$46.00, M-\$23.00  
 Effects of Melting and Processing Variables on Mechanical Properties of Steels, Series MPC-6, 1977, Book No. G00126, L-\$35.00, M-\$17.50  
 Elevated Temperature Properties in Austenitic Stainless Steels, 1974, Book No. G00058, L-\$15.00, M-\$7.50  
 Fracture Toughness of Heavy-Wall Welded Tankage Steel, Series MPC-5, 1977, Book No. G00125, L-\$15.00, M-\$7.50  
 Generation of Isochronous Stress - Strain Curves, 1972, Book No. H00049, L-\$8.00, M-\$4.00  
 Graphite Fiber Composites, 1967, Book No. G00060, L-\$3.50, M-\$1.75  
 Heat-Treated Steels for Elevated Temperature Service, 1966, Book No. H00056, L-\$9.50, M-\$4.75  
 Int'l Research in Production Engineering, 1963, Book No. G00024, L-\$28.00, M-\$14.00  
 Materials Technology—An Interamerican Approach, 1968, Book No. H00034, L-\$27.00, M-\$13.50  
 Materials Technology—Part I—An Interamerican Approach for the Seventies, 1970, Book No. H00075, L-\$30.00, M-\$15.00  
 Materials Education—Part II, An Interamerican Approach for the Seventies, 1970, Book No. H00076, L-\$15.00, M-\$7.50  
 Measurements of the Impacts of Materials Substitution—A Case Study in the Automobile Industry, Book No. H00131, L-\$8.00, M-\$4.00  
 Metal Properties for the Petroleum and Chemical Industries, Series MPC-2, 1976, Book No. G00103, L-\$30.00, M-\$15.00  
 Properties of Steel Weldments for Elevated Temperature Pressure Containment Applications, Series MPC-9, Book No. H00133, L-\$30.00, M-\$15.00  
 Properties of Weldments at Elevated Temperatures, 1968, Book No. H00018, L-\$8.00, M-\$4.00  
 Reports of Current Work on Behavior of Materials at Elevated Temperatures, 1974, Book No. G00087, L-\$18.00, M-\$9.00  
 Structural Integrity Technology, Book No. H00144, L-\$30.00, M-\$15.00  
 Structural Materials for Service at Elevated Temperatures in Nuclear Power Generation, Series MPC-1, 1975, Book No. G00009, L-\$50.00, M-\$25.00  
 Structures and Materials, 1969, Book No. H00023, L-\$22.00, M-\$11.00

Theory of Special Casting Methods, Translation From Russian, 1962, Book No. H00040, L-\$9.00, M-\$4.50  
 2-1/4 Chrome 1 Molybdenum Steel in Pressure Vessels and Piping, 1971, Book No. G00011, L-\$12.50, M-\$6.25  
 2-1/4 Chrome 1 Molybdenum Steel in Pressure Vessels and Piping—A Current Evaluation, 1972, Book No. G00025, L-\$9.50, M-\$4.75  
 Wear of Materials—1977, Book No. H00100, L-\$50.00, M-\$25.00  
 Wear of Materials—1979, Book No. H00143, L-\$60.00, M-\$30.00

## Metric

SI-1 ASME Orientation and Guide for Use of SI (Metric) Units—Eighth Edition, 1978, Book No. E00058, L-\$2.00, M-\$1.00  
 SI-2 ASME Text Booklet, SI Units in Strength of Materials—Second Edition, 1976, Book No. E00082, L-\$3.00, M-\$1.50  
 SI-3 ASME Text Booklet, SI Units in Dynamics, 1976, Book No. E00083, L-\$4.00, M-\$2.00  
 SI-4 ASME Text Booklet—SI Units in Thermodynamics, 1976, Book No. E00084, L-\$6.50, M-\$3.25  
 SI-5 ASME Text Booklet, SI Units in Fluid Mechanics, 1976, Book No. E00085, L-\$5.00, M-\$2.50  
 SI-6 ASME Text Booklet, SI Units in Kinematics, 1976, Book No. E00086, L-\$3.00, M-\$1.50  
 SI-7 ASME Text Booklet, SI Units in Heat Transfer, 1977, Book No. E00087, L-\$5.00, M-\$2.50  
 SI-8 ASME Text Booklet, SI Units in Vibration, 1976, Book No. E00088, L-\$3.00, M-\$1.50  
 SI-10 Steam Charts, SI (Metric and U.S. Customary Units), 1976, Book No. E00090, L-\$25.00, M-\$12.50  
 ASME Steam Tables in SI (Metric) Units For Instructional Use, 1977, Book No. H00093, L-\$3.00, M-\$1.50  
 Transactions of Technical Conference on Metric Mechanical Fasteners, 1975, Book No. E00092, L-\$12.00, M-\$6.00

## Ocean

Deep Ocean Mining, OED-Vol. 8, Book No. G000162, L-\$8.00, M-\$4.00  
 Deepwater Mooring And Drilling 1979, Book No. G00163, L-\$30.00, M-\$15.00  
 Hyperbaric Diving Systems and Thermal Protection, OED-Vol. 6, Book No. H00134, L-\$24.00, M-\$12.00  
 Marine Propulsion Systems OED-Vol. 2, 1976, Book No. G00110, L-\$25.00, M-\$12.50  
 Ocean Energy Resources, OED-Vol. 4, 1977, Book No. G00120, L-\$15.00, M-\$7.50  
 Ocean Engineering Mechanics, OED-Vol. 1, 1975, Book No. G00095, L-\$20.00, M-\$10.00  
 Ocean Resources Utilization, OED-Vol. 3, Book No. G00111, L-\$20.00, M-\$10.00  
 Ocean Thermal Energy Conversion, OED-Vol. 5, Book No. G00139, L-\$18.00, M-\$9.00

## Petroleum

Emerging Energy Technologies—1978, Book No. G00141, L-\$20.00, M-\$10.00  
 Mining Technology for Energy Resources: Advances for the 80's, Book No. G00140, L-\$8.00, M-\$4.00  
 1979 Petroleum Mechanical Engineering Conference and Workshop, 1979, Book No. H00125, L-\$20.00, M-\$10.00

## Power

Advanced Centrifugal Compressors, 1971, Book No. H00038, L-\$16.00, M-\$8.00  
 Advances in Energy Conversion Engineering (Papers, Critiques and Summaries), 1967, Book No. G00053, L-\$32.00, M-\$16.00  
 ASME Steam Tables—Fourth Edition (with Mollier Chart), 1979, Book No. G00038, L-\$22.50, M-\$11.25  
 Mollier Chart only, Book No. G00041, L-\$4.00, M-\$2.00  
 1976 ASME-ANS International Conference on Advanced Nuclear Energy Systems, 1976, Book No. H00099, L-\$55.00, M-\$25.00  
 CIMAC—10th International Conference on Combustion Engines:  
 Discussions only, 1973, Book No. H00085, L-\$20.00, M-\$10.00  
 Discussions only, 1973, Book No. H00085, L-\$20.00, M-\$10.00  
 Coal Fouling and Slagging Parameters, 1974, Book No. H00086, L-\$6.50, M-\$3.25  
 Corrosion and Deposits from Combustion Gases, Abstracts and Index, 1970, Book No. H00084, L-\$25.00, M-\$12.50  
 Diesel and Gas Engine Power:  
 1970 Proceedings, Book No. H00075, L-\$15.00, M-\$7.50  
 1969 Proceedings, Book No. H00009, L-\$12.50, M-\$6.25  
 1968 Proceedings, Book No. H00045, L-\$15.00, M-\$7.50  
 Energy Conservation in Building Heating and Air Conditioning Systems, Book No. H00116, L-\$18.00, M-\$9.00  
 Engineering Developments in Energy Conversion, 1965, Book No. H00062, L-\$14.00, M-\$7.00  
 Fatigue Life Technology, 1977, Book No. H00096, L-\$18.00, M-\$9.00  
 Fuels Research in the Western World, 1964, Book No. H00054, L-\$2.00, M-\$1.00  
 Gas Turbine Combustion and Fuels Technology, Book No. H00107, L-\$14.00, M-\$7.00  
 Gas Turbine Pumps, 1972, Book No. H00076, L-\$12.50, M-\$6.25  
 Loss Prevention of Rotating Machinery, 1972, Book No. G00017, L-\$7.50, M-\$3.75  
 Modeling, Simulation, Testing and Measurements for Solar Energy Systems, Book No. H00138, L-\$18.00, M-\$9.00  
 Nuclear Power Waste Technology, Book No. G00132, L-\$40.00, M-\$20.00  
 1974 Report on Diesel and Gas Engine Power Costs, 1974, Book No. H00049, L-\$5.50, M-\$2.75  
 9th Intersociety Energy Conversion Engineering Conference, 1974, Book No. H00026, L-\$70.00, M-\$35.00  
 Theoretical Steam Rate Tables, 1969, Book No. H00003, L-\$15.00, M-\$7.50  
 Thermal Storage and Heat Transfer in Solar Energy Systems, Book No. H00126, L-\$12.00, M-\$6.00  
 Turbomachinery Developments in Steam and Gas Turbines, 1977, Book No. H00108, L-\$16.00, M-\$8.00

## Pressure Vessels

Advances in Design for Elevated Temperature Environment, 1975, Book No. G00092, L-\$18.50, M-\$9.25  
 Composites in Pressure Vessels and Piping, Series PVP-PB-021, 1977, Book No. G00121, L-\$25.00, M-\$12.50

Computational Fracture Mechanics, 1975, Book No. G00091, L-\$18.50, M-\$9.25  
 Computer Technology in Fusion Energy Research, Book No. H00136, Series PVP-PB-031, Book No. H00136, L-\$18.00, M-\$9.00  
 Coolant Boundary Integrity Considerations in Breeder Reactor Design, Series PVP-PB-027, Book No. G00135, L-\$14.00, M-\$7.00  
 Design for Elevated Temperature Environment, 1971, Book No. G00035, L-\$7.50, M-\$3.75  
 Dynamic Analysis of Pressure Vessel and Piping Components, Series PVP-PB-022, 1977, Book No. G00122, L-\$16.00, M-\$8.00  
 Dynamics of Fluid Structure Systems in the Energy Industry PVP-39, 1979, Book No. H00153, L-\$15.00, M-\$30.00  
 Elevated Temperature Piping Design, PVP-36, 1979, Book No. H00150, L-\$18.00, M-\$9.00  
 1976 Elevated Temperature Design Symposium, 1976, Book No. G00104, L-\$6.00, M-\$3.00  
 Engineering Computer Software: Verification, Qualification, Certification, 1971, Book No. G00042, L-\$12.50, M-\$6.25  
 Failure Data and Failure Analysis: In Power and Processing Industries, Series PVP-PB-023, 1977, Book No. G00123, L-\$16.00, M-\$8.00  
 Finite Element Grid Optimization, PVP-38, 1979, Book No. H00152, L-\$8.00, M-\$4.00  
 Flow-Induced Vibration, 1979, Book No. H00154, L-\$24.00, M-\$12.00  
 Fluid-Structure Interaction Phenomena in Pressure Vessel and Piping Systems, Series PVP-PB-026, 1977, Book No. G00130, L-\$16.00, M-\$8.00  
 Inelastic Behavior of Pressure Vessel and Piping Components, PVP-PB-026, Book No. G00136, L-\$20.00, M-\$10.00  
 Inservice Data Reporting and Analysis, PVP-PB-028, Book No. H00137, L-\$30.00, M-\$15.00  
 Inservice Data Reporting and Analysis Volume II, PVP-35, 1979, Book No. H00149, L-\$30.00, M-\$15.00  
 Lifeline Earthquake Engineering: Buried Pipelines, Seismic Risk, And Instrumentation, PVP-34, 1979, Book No. H00148, L-\$40.00, M-\$20.00  
 Limit Analysis Using Finite Elements, 1976, Book No. G00109, L-\$14.00, M-\$7.00  
 Methods for Predicting Material Life and Fatigue, 1979, Book No. G00166, L-\$38.00, M-\$19.00  
 Numerical Modeling of Manufacturing Processes, Series PVP-PB-025, 1977, Book No. G00131, L-\$20.00, M-\$10.00  
 Piping Restraint Effects on Piping Integrity, PVP-37, 1979, Book No. H00151, L-\$24.00, M-\$12.00  
 Pressure Vessel and Piping 1972 Computer Programs Verification, 1972, Book No. H00024, L-\$15.00, M-\$7.50  
 First International Conference on Pressure Vessel Technology:  
 Design and Analysis—Part I, 1969, Book No. G00062, L-\$37.50, M-\$18.75  
 Materials and Fabrication—Part II, 1969, Book No. G00063, L-\$37.50, M-\$18.75  
 Discussions—Part III, 1970, Book No. G00064, L-\$20.00, M-\$10.00  
 Second International Conference on Pressure Vessel Technology:  
 Part I—Design and Analysis, 1973, Book No. G00082, L-\$40.00, M-\$20.00  
 Part II—Materials, Fabrication and Inspection, 1973, Book No. G00083, L-\$40.00, M-\$20.00  
 Part III—Discussions, 1974, Book No. G00084, L-\$20.00, M-\$10.00  
 Third International Conference on Pressure Vessel Technology:  
 Part I—Design and Analysis, 1977, Book No. G00115, L-\$75.00, M-\$37.50  
 Part II—Materials and Fabrication, 1977, Book No. G00116, L-\$75.00, M-\$37.50  
 Part III—Discussions, 1977, Book No. G00117, L-\$50.00, M-\$25.00  
 Pressure Vessels and Piping/Computer Program Evaluation and Qualification, Series PVP-PV-024, 1977, Book No. G00124, L-\$16.00, M-\$8.00  
 Pressure Vessels and Piping: Design and Analysis—A Decade of Progress:  
 Volume One—Analysis, 1972, Book No. G00019, L-\$35.00, M-\$17.50  
 Volume Two—Components and Structural Dynamics, 1972, Book No. G00020, L-\$35.00, M-\$17.50  
 Volume Three—Materials and Fabrication, 1976, Book No. G00100, L-\$50.00, M-\$25.00  
 Volume Four—Quality Assurance—Applications—Components, 1976, Book No. G00101, L-\$50.00, M-\$25.00  
 Pressure Vessels and Piping—Verification and Qualification of Inelastic Analysis Computer Programs, 1975, Book No. G00088, L-\$12.50, M-\$6.25  
 Probabilistic Analysis and Design of Nuclear Power Plant Structures, Series PVP-PB-030, Book No. H00135, L-\$18.00, M-\$9.00  
 Reliability Engineering in Pressure Vessels and Piping, 1975, Book No. G00089, L-\$11.00, M-\$5.50  
 Safety Relief Valves, PVP-33, 1979, Book No. H00147, L-\$24.00, M-\$12.00  
 Simplified Methods in Pressure Vessel Analysis, Series PVP-PB-029, Book No. G00137, L-\$18.00, M-\$9.00  
 Software User: Education and Qualification, 1972, Book No. H00016, L-\$5.50, M-\$2.75  
 Thermal Structural Analysis Programs: A Survey and Evaluation, 1972, Book No. H00019, L-\$8.50, M-\$4.25  
 Three-Dimensional Continuum Computer Programs for Structural Analysis, 1972, Book No. H00021, L-\$6.00, M-\$3.00

## Research

Bourdon Tubes and Bourdon Tube Gages: An Annotated Bibliography, Book No. H00094, L-\$7.00, M-\$3.50  
 Consensus on Operating Practices for the Control of Feedwater and Boiler Water Quality in Modern Industrial Boilers, 1979, Book No. H00156, L-\$8.00, M-\$4.00  
 Research Needs Report: Design, Materials, and Manufacturing Research, 1976, Book No. H00089, L-\$5.00, M-\$2.50  
 Research Needs Report: Energy Conversion Research, 1976, Book No. H00090, L-\$10.00, M-\$5.00  
 Research Needs Report: Environmental And Conservation Research, 1979, Book No. H00142, L-\$5.00, M-\$2.50  
 Research Needs Report: Fundamental Research Needs, 1978, Book No. H00139, L-\$2.50, M-\$1.25

## Safety

Measurements for Industrial Noise Control, 1979, Book No. G00164, L-\$7.00, M-\$3.50

## Solid Waste

Combustion Fundamentals for Waste Incineration, 1974, Book No. H00087, L-\$30.00, M-\$15.00

## TRANSACTIONS OF THE ASME

Disposal of Industrial Wastes by Combustion, Present State-of-the-Art—  
 Volume III, 1977, Book No. H00092, L-\$15.00, M-\$7.50  
 Incinerator and Solid Waste Technology, 1962-1975, Book No. H00092, L-\$60.00, M-\$30.00  
 1970 National Incinerator Conference (With Discussions), 1970, Book No. H00070, L-\$25.00, M-\$12.50  
 Discussions only, Book No. H00060, L-\$6.50, M-\$3.25  
 1972 National Incinerator Conference (With Discussions), 1972, Book No. H00081, L-\$28.00, M-\$14.00  
 Discussions only, Book No. H00079, L-\$5.00, M-\$2.50  
 1974 National Incinerator Conference—Resource Recovery Thru Incineration (With Discussions), 1974, Book No. H00083, L-\$35.00, M-\$17.50  
 1976 National Waste Processing Conference—From Waste to Resource Through Processing (With Supplement), 1976, Book No. H00096, L-\$90.00, M-\$45.00  
 1978 National Waste Processing Conference: Energy Conservation Through Waste Utilization, Book No. H00119, L-\$90.00, M-\$45.00  
 Present Status and Research Needs in Energy Recovery from Wastes—Proceedings of the 1976 Conference, 1977, Book No. H00091, L-\$35.00, M-\$17.50  
 Thermodynamic Data for Waste Incineration, 1979, Book No. H00141, L-\$30.00, M-\$15.00

## Transportation

Aerodynamics of Transportation, 1979, Book No. G00147, L-\$30.00, M-\$15.00  
 Anthology of Rail Vehicle Dynamics—Freight Car Impact—Vol. I, 1971, Book No. H00064, L-\$20.00, M-\$10.00  
 Anthology of Rail Vehicle Dynamics—Effects of Train Action and Rail Car Vibration—Vol. II, 1972, Book No. H00065, L-\$25.00, M-\$12.50  
 Anthology of Rail Vehicle Dynamics—Axles, Wheels and Rail-Wheel Interaction—Vol. III, 1973, Book No. H00066, L-\$30.00, M-\$15.00  
 Combined price for H00064-65-66, L-\$65.00, M-\$32.50  
 Defining Transportation Requirements—1968 Transportation Engineering Conference, 1969, Book No. H00063, L-\$17.50, M-\$8.75  
 Fifth International Forum for Air Cargo, 1970, Book No. G00069, L-\$12.50, M-\$6.25  
 1966 National Transportation Symposium, 1966, Book No. H00058, L-\$22.00, M-\$11.00  
 1970 Rail Transportation Proceedings, 1970, Book No. G00071, L-\$19.00, M-\$9.50  
 1971 Rail Transportation Proceedings, 1971, Book No. G00080, L-\$20.00, M-\$10.00  
 1972 Rail Transportation Proceedings, 1972, Book No. H00053, L-\$25.00, M-\$12.50  
 1973 Rail Transportation Proceedings, 1973, Book No. G00023, L-\$25.00, M-\$12.50  
 1974 Rail Transportation Proceedings, 1974, Book No. G00086, L-\$25.00, M-\$12.50  
 1975 Rail Transportation Proceedings, 1975, Book No. G00098, L-\$30.00, M-\$15.00  
 Railway Mechanical Engineering—A Century of Progress—Car and Locomotive Design, 1979, Book No. H00155, L-\$50.00, M-\$25.00  
 Symposium on Railroad Equipment Dynamics, 1976, Book No. G00102, L-\$20.00, M-\$10.00

## General Books of Interest

Adventures in the Navy, in Education, Science, Engineering and in War (by W. F. Durand) A Life Story, 1953, Book No. A00003, L-\$5.00, M-\$2.50  
 Annotated Bibliography on High Pressure Technology, 1964, Book No. H00046, L-\$14.50, M-\$7.25  
 Index to ASME Technical Papers (1880-1956), 1957, Book No. H00028, L-\$29.00, M-\$14.50  
 High-Pressure Measurement, 1963, Book No. H00031, L-\$10.95, M-\$5.48  
 I Remember—Autobiography of Dexter S. Kimball, 1953, Book No. A00006, L-\$5.00, M-\$2.50  
 Miller, Fred J., A Biography, 1941, Book No. A00007, L-\$2.00, M-\$1.00  
 National Historic Mechanical Engineering Landmarks, Book No. H00140, L-\$15.00, M-\$7.50  
 Scientific Blacksmith—An Autobiography of Mortimer E. Cooley, 1947, Book No. A00010, L-\$4.50, M-\$2.25  
 Standard Handbook for Mechanical Engineers, 8th Edition, 1978, Book No. E00028, L-\$42.50, M-\$21.25

## Periodicals

**MECHANICAL ENGINEERING**—Annual subscription price is \$20.00 (subscription included in membership dues). Add \$2.00 for postage for subscriptions mailed outside the U.S. and Canada. New subscriptions and subscriptions mailed outside the U.S. and Canada must be prepaid.

**APPLIED MECHANICS REVIEWS** (published monthly)—Annual subscription price is \$25.00 to nonmembers and \$22.50 to ASME members. Add \$2.50 for each subscription mailed outside the U.S. and Canada. New subscriptions and subscriptions mailed outside the U.S. and Canada must be prepaid.

### TRANSACTIONS OF THE ASME

*Journal of Applied Mechanics*  
*Journal of Biomechanical Engineering*  
*Journal of Dynamic Systems, Measurement and Control*  
*Journal of Energy Resources Technology*  
*Journal of Engineering for Industry*  
*Journal of Engineering for Power*  
*Journal of Engineering Materials and Technology*  
*Journal of Fluids Engineering*  
*Journal of Heat Transfer*  
*Journal of Lubrication Technology*  
*Journal of Mechanical Design*  
*Journal of Pressure Vessel Technology*

Annual subscription rates to nonmembers: one journal \$50.00, two journal, \$96.00, three journals \$144.00, four journals \$192.00, five journals \$240.00, six journals \$276.00, seven journals \$322.00, eight journals \$368.00, nine journals \$400.00, ten journals \$440.00, eleven journals \$484.00, all twelve journals \$528.00. ASME members: 50% discount on first subscription for any one Transactions journal. Add \$1.50 for each journal mailed outside the U.S. and Canada. Transactions subscriptions in excess of twelve . . . \$40.00 per annual subscription. New subscriptions and subscriptions mailed outside the U.S. and Canada must be prepaid.

## ASME MISCELLANEOUS PAPERS

The papers in this list were presented at ASME during 1978 but were not published in the *Transactions* of the ASME or in full in MECHANICAL ENGINEERING. They can be consulted in the Engineering Societies Library where photostatic copies may be obtained and quotations will be given upon request.

### A

- Abdel-Salam, O. and Winnick, J.**  
Molten-Carbonate CO<sub>2</sub> Concentrator: Preliminary Experiments. 78-ENAs-2.
- Abeles, F.**  
See Kaplan, H.
- Abo-El-Ata, M. M.**  
See Nelson, D. V.
- Abou-Sayed, A. S., Lingle, R. and Jones, A. H.**  
Sonoc Wave Mode Conversion During Three-Dimensional Logging. 78-Pet-22.
- Abuaf, N., Jones, O. C. and Zimmer, G. A.**  
Response Characteristics of Optical Probes. 78-WA/HT-3.
- Ackerman, A. J.**  
America's Abundant Electricity Due to the ASME Boiler Code: It All Began with An Appalling Disaster. 78-WA/TS-2.
- Adair, S.**  
See Blum, E.
- Adams, D. R.**  
See Parker, B. A.
- Adams, R. G., Boenig, F. H. and Pfeifer, G. D.**  
Bearing Compartment Seal Systems for Turbomachinery in Direct-Cycle HTGR Power Plants. 78-GT-38.
- Adler, A.**  
Telemetry for Rotating Measurements on Turbomachinery. 78-GT-105.
- Alimiwala, K. A. and Mayne, R. W.**  
Interactive Computer Methods for Design Optimization. 78-DET-84.
- Agrawal, G. K.**  
Optimal Design of Helical Springs for Minimum Weight by Geometric Programming. 78-WA/DE-1.
- Ahmad, A. and Robertson, G. D.**  
Displacement Analysis of RRGR Mechanism. 78-DET-8.
- Ali-Ali, M. A. and Wilde, D.**  
Optimal Area Allocation in Multistage Heat Exchanger Systems. 78-WA/HT-60.
- Akai, T. J.**  
See Alassi, H.
- Akers, D. J.**  
See Stanley, R. E.
- Ali, M. W. and Ten Eyck, R. L.**  
Locomotive Engine Life Support Systems. 78-WA/RT-7.
- Allemann, J. C.**  
See Engell, M.
- Allen, B.**  
See Coalson, H.
- Allen, C. R., Cowan, R. G. and Grelecki, C. J.**  
Acid Digestion and Pressurization Control in Combustible Radwaste Treatment. 78-NE-17.
- Allen, D. T.**  
See Thurston, G. C.
- Allen, R. W.**  
See Anand, D. K.
- Al-Qureshi, H. A.**  
Confined and Unconfined Elastomer Dies for Metal Bending. 78-DE-11.
- Ameel, T. A.**  
See Townes, H. W.
- A-Moneim, M. T. and Chang, Y. W.**  
Comparison of ICEPEL Predictions with Single Elbow Flexible Piping System Experiment. 78-PVP-55.
- Anand, D. K., Dief, I. N. and Allen, R. W.**  
Stochastic Predictions of Solar Cooling System Performance. 78-WA/Sol-16.
- Anderson, C. A., Whiteman, D. E., Smith, P. D. and Yao, J. T. P.**  
A Method for Reliability Analysis of Concrete Reactor Vessels. 78-PVP-100.

- Anderson, C. A.**  
See Bennett, J. G.
- Anderson, E. E.**  
See Gharmalkar, D. R.
- Anderson, G. D.**  
See Hanson, M. E.
- Anderson, G. G.**  
A Boiler Without Water Is... 78-Pet-19.
- Anderson, H. G. and Zirkelback, C. E.**  
An Overspeed Test Program In A Petrochemical Plant. 78-DGP-27.
- Anderson, J. C. and Masri, S. F.**  
Analytical Experimental Correlation of a Nonlinear System Subjected to a Dynamic Load. 78-PVP-37.
- Anderson, P. J.**  
See Seay, J. G.
- Anderson, R.**  
See Fitzgerald, R.
- Anderson, R. W.**  
See Hannah, R. R.
- Andrews, D. K. and Smart, M. W.**  
Fuel Flow Elements for Automotive and Small Industrial Gas Turbines. 78-GT-17.
- Anger, R. T. and Wang, R. W.**  
The Performance of Automotive Hand Controls. 78-WA/DSC-38.
- Antipas, A.**  
See Kobayashi, A. S.
- Apostolids, M., Crippa, R. A. and Van Walleghem, W.**  
Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center. 78-Pet-42.
- Appl, F. C., Rao, B. N. and Walker, B. H.**  
Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond. 78-Pet-39.
- Araujo, P. M. S. and Stuckenbruck, S.**  
Laminar Heat Transfer in Porous Ducts with Variable Suction. 78-WA/HT-41.
- Ariga, I.**  
See Mizuki, S.
- Armstrong, F. W. and Philpot, M. G.**  
Future Prospects for Naval Propulsion Gas Turbines. 78-GT-106.
- Arnold, J. N., Edwards, D. K. and Wu, P. S.**  
Effect of Cell Size on Natural Convection in High L/D Tilted Rectangular Cells Heated and Cooled on Opposite Faces. 78-WA/HT-5.
- Arpacl, V. S., Kabiri-Bamradian, K. and Cembasi, E.**  
Finite Amplitude Benard Convection of Purely Radiating Fluids. 78-HT-40.
- Asbill, W. T.**  
See Tate, M. C.
- Aschner, F. S.**  
See Weiner, D.
- Ashland, M.**  
See Mumma, S. A.
- Asmis, G. J. K. and Duff, C. G.**  
Seismic Design of Gyroscopic Systems. 78-PVP-44.
- Alassi, H. and Akai, T. J.**  
Aerodynamic Force and Moment on Oscillating Airfoils in Cascade. 78-GT-181.
- Atz, R. W. and Tessier, M. J.**  
High Temperature Testing of a Sodium Pump. 78-WA/NE-12.
- Audel, N. F. and Orner, G. M.**  
Dry-Ice, Liquid-Pulse-Pump, Portable Cooling System. 78-ENAs-41.
- Audibert, J. M. E., Lal, N. W. and Bea, R. G.**  
Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces. 78-Pet-37.
- Auslander, D. M.**  
See Tomizuka, M.
- Austin, G. J.**  
See Huggett, B. M.

- Austin, L. G.**  
See Moza, A. K.
- Au-Yang, M. K.**  
Pump-Induced Acoustic Pressure Distribution in An Annular Cavity Bounded by Rigid Walls. 78-PVP-69.
- Axtman, W. H.**  
See Precious, R. W.
- Ayers, D. L.**  
See Baladi, J. Y.
- Azar, J. J. and Solteit, R. E.**  
A Comprehensive Study of Marine Drilling Risers. 78-Pet-61.
- Aziz, T. S. and Duff, C. G.**  
Decoupling Criteria for Seismic Analysis of Nuclear Power Plant Systems. 78-PVP-27.
- Aziz, T. S. and Duff, C. G.**  
Mass Coupling Effects in the Dynamic Analysis of Nuclear Power Plant Systems. 78-PVP-28.

### B

- Baazari, Z.**  
See Watson, N.
- Badgley, R. H.**  
See Smalley, A. J.
- Badri-Nath, Y. V.**  
See Ditaranto, R. A.
- Bagci, C.**  
Synthesis of the Four-Bar Mechanisms for the Generation of Symmetrical "V" Shaped Coupler Curves of Specified Flank Angles for Linkage-Geneva Mechanisms. 78-DET-52.
- Bagci, C.**  
Synthesis of the Plane Four-Bar Mechanism for Torque Generation, and Application to a Case Study for the Design of a New Balancing Mechanism for Rotary Top Brush in Power Wax Car Washing Machines. 78-DET-71.
- Bailey, M. P.**  
See Maher, W. E.
- Baines, T. M. and Somers, L. H.**  
Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project. 78-DGP-29.
- Baker, G. R.**  
See Guenther, D. A.
- Baker, P. D. and Masom, R. A.**  
Recent Developments in Sensors for the Gas Turbine Engine. 78-GT-52.
- Baker, P. H. and Schulze, F. W.**  
Progress in Railway Mechanical Engineering - 1977-1978 Report of Survey Committee Locomotives. 78-WA/RT-16.
- Baker, R. C.**  
See Goulas, A.
- Bakker-Arkema, F. W.**  
See Lerew, L. E.
- Baladi, J. Y., Schoenhals, R. J. and Ayers, D. L.**  
Transient Heat and Mass Transfer in Soils. 78-HT-31.
- Baldwin, R. M.**  
See Wachel, J. C.
- Baliga, B. R., Liu, C. H. and Pfender, E.**  
Critical Steady-State Heat Fluxes Causing Melting or Evaporation of the Anode in a High Intensity Arc. 78-HT-10.
- Bammert, K. and Sandstede, H.**  
Gas Turbine Education and Research Programs in German Universities. 78-GT-171.
- Bammert, K., Krapp, R. and Reiter, U.**  
Nonsteady Operational Behavior of Single-Shaft and Two-Shaft Closed-Cycle Gas Turbines. 78-GT-15.



- Bammert, K., Rautenberg, M. and Wittekindt, W.**  
Vaneless Diffuser Flow with Extremely Distorted Inlet Profile. 78-GT-47.
- Bancow, H. E. and Crisp, J. N.**  
Pressure Distribution from Experimental Data for Elasto-hydrodynamic Point Conjunctions. 78-Lub-3.
- Barash, M. M.**  
Speculations on the Future of Numerical Controls. 78-WA/DSC-9.
- Barash, M. M.**  
See **Nof, S. Y.**
- Barash, M. M.**  
See **Wysk, R. A.**
- Barclay, B. A., Lenox, T. G. and Bosco, C. J.**  
Full Authority Digital Electronic Control - Highlights of Next Generation Propulsion Control Technology. 78-GT-165.
- Barker, C. R.**  
See **Summers, D. A.**
- Barnes, R. H.**  
See **Dannenmaier, J. H.**
- Barrett, R. E.**  
See **Hazard, H. R.**
- Barth, H. Th.**  
Piston Motion Influences, Measurements, Calculations. 78-DGP-17.
- Barthelemy, R., Jackson, D. and Rabe, D.**  
Heat Pipe Mirrors for High Power Lasers. 78-HT-60.
- Bartok, W., Manny, E. H., Crawford, A. R. and Hall, R. E.**  
Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers. 78-WA/APC-7.
- Basavanthally, N., Chmielewski, J. F. and Saliba, G.**  
Dynamic Analysis of Steering Forces in Belt Conveyors. 78-WA/MH-3.
- Bass, B. R.**  
Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method. 78-WA/TM-1.
- Baughn, J. W., Launder, B. E., Hoffman, M. A. and Samaraweera, D. S. A.**  
Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation. 78-WA/HT-15.
- Baughn, J. W.**  
See **Kraabel, J. S.**
- Baxendal, B. V. and Inglis, M. E.**  
Simulation of Helicopter Powerplant Performance. 78-GT-51.
- Baxter, W. F.**  
See **Marshall, J. L.**
- Bayley, F. J.**  
Performance and Design of Transpiration-Cooled Turbine Blading. 78-GT-122.
- Baz, A., Khafagy, S. and Micheal, S.**  
Analysis of Pneumatically Driven Double-Acting Reciprocating Pumps. 78-DE-19.
- Baz, A., Rabie, G. and Zaki, H.**  
A New Class of Spool Valves with Built-In Dampers. 78-DE-6.
- Bea, R. G.**  
See **Audibert, J. M. E.**
- Beard, M. G., Pratt, C. M. and Timmis, P. H.**  
Recent Experience on Centrifugal Compressors for Small Gas Turbines. 78-GT-193.
- Becker, B., Günther, J. and von Schwerdtner, O.**  
Investigation of an Axial Flow Compressor with Variable Reynolds Number and Inlet Casing Geometry. 78-GT-185.
- Beggs, H. D., Brill, J. P., Proaño, E. A. and Roman-Lazo, C. E.**  
Selection and Sizing of Velocity Actuated Subsurface Safety Valves. 78-Pet-8.
- Beggs, H. D.**  
See **Shiu, K. C.**
- Beguler, C. and Dekeyser, I.**  
Triple-Correlations Closure Models in an Asymmetric Heated Plane-Jet with Negative Production. 78-HT-1.
- Bell, R. J.**  
See **Impagialazzo, A. M.**
- Belytschko, T., Kennedy, J. M. and Schoeberle, D. F.**  
Quasi-Eulerian Finite Element Formulation for Fluid-Structure Interaction. 78-PVP-60.
- Bendel, W. B.**  
See **Egan, B. A.**
- Benenson, D. M.**  
See **Chien, Y. K.**
- Bennett, J. G. and Anderson, C. A.**  
Structural Design for a 10-GWh SMES Vacuum Vessel. 78-PVP-46.
- Benson, R. S. and Fisher, U.**  
A Proposed Scheme for Computer Aided Design and Manufacture of Radial Turbine Rotors. 78-GT-156.
- Benvenuti, E.**  
Aerodynamic Development of Stages for Industrial Centrifugal Compressors. Part 1: Testing Requirements and Equipment - Immediate Experimental Evidence. 78-GT-4; Part 2: Test Data Analysis, Correlation and Use. 78-GT-5.
- Bergholz, R. F.**  
Natural Convection of a Heat Generating Fluid in a Closed Cavity. 78-WA/HT-6.
- Bergmann, H. K.**  
See **Hardenberg, H. O.**
- Berkof, R. S.**  
Mechanism Case Studies IV. 78-DET-19.
- Berman, P. A.**  
Compressed Air Energy Storage Turbo-Machinery. 78-GT-97.
- Bernard-Connelly, M., Biron, A. and Bul-Quoc, T.**  
Low-Cycle Sumulative Damage with Two-Strain Repeated Blocks on a Stainless Steel at High Temperature. 78-PVP-88.
- Bernstein, E. and Cashman, J.**  
The Energy Saver Combined Cycle. 78-GT-127.
- Berry, J. T.**  
See **Tseng, A.**
- Berry, P., Cataldi, C. and Dantini, E. M.**  
Geothermal Stimulation with Chemical Explosives. 78-Pet-67.
- Berry, W. E. and Hunt, S. R.**  
Animal Life Support Transporters for Shuttle/Spacelab. 78-ENAS-10.
- Beyea, J.**  
See **Duff, G. S.**
- Bhaskaren, P.**  
See **Ramamurthy, A. S.**
- Bhushan, B.**  
New Design Concepts in Safety of Tractor-Trailers. 78-DET-83.
- Biancheria, A.**  
See **Roth, T. S.**
- Bigley, W. J. and Rizzo, V.**  
Resonance Equalization in Feedback Control Systems. 78-WA/DSC-24.
- Bilgen, E. and Jeldres, R.**  
On the Optimisation of Trombe Wall Solar Collectors. 78-WA/Sol-13.
- Biron, A.**  
See **Bernard-Connelly, M.**
- Biswas, J. K. and Duff, G. G.**  
Response Spectrum Method with Residual Terms. 78-PVP-79.
- Bjerklie, J. W. and Curtis, R. H.**  
Demonstration of Fuel Conservation in High Temperature Industrial Furnaces. 78-WA/Ener-8.
- Blaine, D. G., Grejda, F. J. and Kahr, J. C.**  
Braking Duty in North American Freight Train Service and Effects on Brake Equipment, Brake Shoes and Wheels. 78-RT-9.
- Blazewicz, A. J. and Gold, M.**  
Chromizing and Turbine Solid Particle Erosion. 78-JPGC-Pwr-7.
- Blondeau, R.**  
See **Boulisset, R.**
- Blum, E. and Adair, S.**  
Slip Ring Eliminator, A Clock-Spring Approach. 78-DET-3.
- Boenig, F. H.**  
See **Adams, R. G.**
- Bogdanoff, J. L.**  
See **Sun, C. T.**
- Bogden, F. J. and Periman, R. M.**  
A Constant Strain Element Model Stress Accuracy Prediction Method - ESP. 78-PVP-65.
- Book, W. J.**  
Analysis of Massless Elastic Chains with Servo Controlled Joints. 78-WA/DSC-34.
- Booth, L. E.**  
See **Leung, P.**
- Bornstein, B. and Harris, L.**  
Selecting an Optimum Rating for Feedpump Turbine Drivers. 78-JPGC-Pwr-4.
- Bortz, S. A.**  
See **Courtney, W. J.**
- Bortz, S. A.**  
See **Larsen, D. C.**
- Bosco, C. J.**  
See **Barclay, B. A.**
- Boucher, R. J.**  
Project Sunrise. 78-WA/Aero-15.
- Boudigues, S.**  
Training in the Gas Turbine Field in Belgium, in France, in Italy. 78-GT-169.
- Boulisset, R., Blondeau, R., Dollet, J. and Lejay, H.**  
Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels. 78-Pet-16.
- Bouras, W. T.**  
See **Charlesworth, D. H.**
- Bowman, G. H. and Sebesta, P. D.**  
Support System Considerations for STS Biological Investigations. 78-ENAS-37.
- Boyer, J. L.**  
See **Martineau, C.**
- Braaten, R. J.**  
A Generalized Torsion Spring Design Method. 78-DET-82.
- Brackley, E. J.**  
Consideration of Local Piping Stiffness in Dynamic Analysis of Piping Systems with Non-Linear Restraints. 78-PVP-109.
- Brandley, J. R.**  
A Case Study in Technology Transfer. 78-DET-81.
- Braren, R.**  
See **McGowan, J. G.**
- Bray, D. E. and Stubbings, M. D.**  
Reliability and Failure Analysis of High Utilization Railway Cars. 78-WA/RT-1.
- Brewer, J. W.**  
See **Hubbard, M.**
- Bridwell, M. C.**  
See **Fowler, J. R.**
- Britley, R. P.**  
See **Rehfield, L. W.**
- Brill, J. P.**  
See **Baggs, H. D.**
- Broadway, W.**  
A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service. 78-Pet-30.
- Brodie, L. C., Sinha, D. N., Sanford, C. E. and Semura, J. S.**  
Bismuth Magnetoresistive Thermometry for Transient Temperature Measurements in Liquid Helium. 78-WA/HT-4.
- Bronson, L. E. and Prentice, R. M.**  
Propulsion System Design for the Multi-Mission Patrol Ship Mark 1/1A. 78-GT-182.
- Brouillette, A. O.**  
See **Smith, W. L.**
- Brown, R. A. and Busch, C. F.**  
Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility. 78-WA/APC-12.
- Brown, S. J. and McKinley, D. A.**  
Thermal Transient Stress Analysis of Cylinder-to-Cylinder Structures by the Finite Plate Method. 78-PVP-76.
- Brown, T. D., Lee, G. K. and Sekhar, N.**  
Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents. 78-WA/APC-3.
- Brownstein, M. and Levesque, R. G.**  
Experience with Cement Usage as the Binding Agent for Radwaste. 78-NE-15.
- Brynjolfsson, A.**  
See **Wang, C. P.**

**Bryson, A. E.**  
Some Connections Between Modern and Classical Control Concepts. 78-WA/DSC-20.

**Buban, E. E.**  
See Gray, R. E.

**Bublevsky, A. F. and Yas'ko, O. I.**  
Investigation of Heat Transfer Between an Electric Arc and a Turbulent Gas Flow in a Channel. 78-HT-8.

**Buchanan, E.**  
See Due, H. F.

**Buckley, L. P.**  
See Charlesworth, D. H.

**Buckley, S. B.**  
See Khandani, S. M. H.

**Buckley, S. B.**  
See Manzano, J. J.

**Bul, T. M.**  
See Salcudean, M.

**Bul-Quoc, T.**  
See Bernard-Connolly, M.

**Buller, M. L. and Martinek, F.**  
Experimental Study of the Inflow Effects on a Natural Convection Heat Sink. 78-WA/HT-30.

**Burdick, W. J.**  
See Salzano, V. A.

**Burgess, D. S.**  
See Ehrman, C. S.

**Burgess, J. A.**  
Auditing An Engineering Organization. 78-WA/Mgt-7.

**Burmeister, L. C.**  
Triangular Fin Performance by the Heat Balance Integral Method. 78-WA/HT-50.

**Burns, D. J.**  
See Hartung, H. F.

**Burrows, C. R.**  
See Stanway, R.

**Busch, C. F.**  
See Brown, R. A.

**Buah, W. H. and White, R. C.**  
Life Sciences Experiments Mission Development Test Program. 78-ENAs-36.

**Butze, H. F.**  
See Roberts, P. B.

**Buzek, J. R.**  
See Epstein, H. I.

## C

**Cagliostro, D. J.**  
See Romander, C. M.

**Calm, J. M.**  
Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems. 78-WA/HT-63.

**Campbell, T. C.**  
Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines. 78-WA/MH-1.

**Carleton, R. S.**  
See Marron, H. D.

**Carlson, H.**  
Spring Fatigue Recommended Design Stresses. 78-DE-5.

**Carlson, M. G., Robson, R. L., Westmoreland, J. S. and Talbert, W. M.**  
Second-Generation Integrated Coal Gasification/Combined-Cycle Power Systems. 78-GT-14.

**Carlson, T. C. G. and Goss, W. P.**  
A Comprehensive Energy Analysis Applied to an Ocean Thermal Energy Conversion Systems. 78-TS-6.

**Camavos, T. C.**  
Cooling Air in Turbulent Flow with Multi-Passage Internally Finned Tubes. 78-WA/HT-52.

**Camavos, T. C.**  
See Van Hagan, T. H.

**Carr, R. C.**  
See Hersh, S.

**Carr, R. W., Charnock, H. O. and McBride, J. P.**  
Design of Sodium-Cooled Reactor Systems and Components for Maintainability. 78-JPGC-NE-3.

**Carter, D. A.**  
See Every, R. L.

**Carter, W. A.**  
See Hunter, S. C.

**Caruvana, A., Day, W. H., Manning, G. B. and Sheldon, R. C.**  
Evaluation of a Water-Cooled Gas Turbine Combined Cycle Plant. 78-GT-77.

**Cashman, J.**  
See Bernstein, E.

**Cason, C. and Horton, T. E.**  
Thermal-Acoustical Phenomena in Pulsed High Energy Lasers. 78-HT-61.

**Cataldi, C.**  
See Berry, P.

**Calton, I.**  
See Yao, L. S.

**Cesmesabi, E.**  
See Arpac, V. S.

**Chan, D. P. and Jackson, R. J.**  
Fuel Pin Bundle and Hexagonal Duct Mechanical Interaction. 78-PVP-48.

**Chandler, A. L. and Finkelstein, A. R.**  
Turbine Blade Tip Clearance Measurement Utilizing BoreScope Photography. 78-GT-164.

**Chandler, F. D.**  
See Edwards, P. R.

**Chang, R. Y.**  
See Chen, F. Y.

**Chang, Y. W.**  
See A-Moneim, M. T.

**Chang, Y. W.**  
See Wang, C. Y.

**Chapel, F. G., Martin, D. A. and Gore, D. C.**  
Extended Duration Orbiter Life Support System Options. 78-ENAs-31.

**Charlesworth, D. H., Bourns, W. T. and Buckley, L. P.**  
The Canadian Development Program for Conditioning CANDU Reactor Wastes for Disposal. 78-NE-18.

**Charnock, H. O.**  
See Carr, R. W.

**Chawla, U. S.**  
Closed-End Cylindrical Shell Under Line Load Along a Generator. 78-PVP-85.

**Cheadle, B. A. and Williams, G. N.**  
Computer Assisted Analysis of Cracking in Zr-2.5 Wt % Nb Pressure Tubes. 78-PVP-42.

**Chen, E. Y. and Mehdizadeh, P.**  
Metallurgical Studies of Deepwater Pipeline Laid by Reeled Pipe Method. 78-Pet-55.

**Chen, F. Y.**  
Discrete Modeling of Mechanical Systems. 78-DET-80.

**Chen, F. Y. and Chang, R. Y.**  
Dynamic Response Characteristics of Contact Separation in a Preloaded Mechanical Joint. 78-DET-48.

**Chen, F. Y.**  
Storoidal Motion - A New Class of Cam Profiles. 78-DET-20.

**Chen, S. S. and Jendzejczyk, J. A.**  
Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow. 78-PVP-15.

**Chen, W. J.**  
See Lee, Y.

**Chen, W. L., Ishii, M. and Grohms, M. A.**  
Simple Fuel Pin Transient and Melting Model and Its Applications to Thermal-Hydraulics in LMFBR Subassembly. 78-WA/HT-26.

**Cheng, K. C.**  
See Gilpin, R. R.

**Cheung, F. B.**  
Turbulent Natural Convection in a Horizontal Fluid Layer with Time Dependent Volumetric Energy Sources. 78-HT-6.

**Chia, W.-K. R.**  
Preheat Temperature for Vacuum Dewatering of Sealed Bit Bearing Prior to Greasing. 78-Pet-38.

**Chiang, C. W.**  
See Hopkins, D. C.

**Chidananda, M. S.**  
See Sridhara, K.

**Chien, Y. K., Vu, D. M. and Benenson, D. M.**  
Model for Radiation Diagnostics in Turbulent Arcs. 78-HT-13.

**Chigier, N. A.**  
See Thompson, D.

**Chinone, H.**  
See Kohzu, M.

**Chlou, J. P.**  
The Effect of the Longitudinal Heat Conduction and the Flow Nonuniformity on the Thermal Performance of Crossflow Heat Exchanger. 78-WA/HT-51.

**Chmielewski, J. F.**  
See Basavanahally, N.

**Cho, S. M., Cook, M. E., Fair, C. E. and Zury, H. L.**  
Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps. 78-WA/NE-4.

**Cho, S. M., Kao, T. T. and Hassett, S. E.**  
Thermal/Hydraulic Design of Dry-Saturated Steam Evaporators for a Large Fast Breeder Reactor Plant. 79-JPGC-NE-7.

**Choi, K. W. and Yao, N. P.**  
Heat Transfer in Lead-Acid Batteries. 78-HT-52.

**Chou, Y. F.**  
See Sun, C. T.

**Chow, L. S. H., Johnson, T. R. and Viskanta, R.**  
Slag Transport Models for Radiant Heater of an MHD System. 78-WA/HT-21.

**Chu, H. Y.**  
See Wang, C. Y.

**Cipolla, R. C.**  
See Egan, G. R.

**Cipolla, R. C.**  
See Thomas, J. M.

**Cleary, M. P.**  
Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations. 78-Pet-47.

**Coalson, H., McGee, L. and Allen, B.**  
Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy. 78-WA/PEM-3.

**Cohn, A.**  
See Horner, M. W.

**Cohn, A.**  
See Pillsbury, P. W.

**Colasurdo, G.**  
See Pandolfi, M.

**Cole, R. W.**  
See Mogul, J. M.

**Coliello, M. A.**  
See Sears, J. W.

**Colombo, G. V., Putnam, D. F. and Sauer, R. L.**  
Microbial Check Valve for Shuttle. 78-ENAs-27.

**Colpin, J. and Kool, P.**  
Experimental Study of An Axial Compressor Rotor Transfer Function with Non-Uniform Inlet Flow. 78-GT-69.

**Comfort, R. M.**  
See Powe, R. E.

**Comptello, F. E.**  
See Kamchi, J. S.

**Conte, F. and La Croix, A.**  
Phenix Plant Operation and Maintenance Experience. 78-JPGC-NE-2.

**Conti, A., Corbo, M., Lamberti, E. and Rossetto, S.**  
Seamless Tubes Factory: Computer Simulation for Design and Management. 78-WA/Prod-37.

**Cook, D. R.**  
Improving Productivity Through Engineering Administration. 78-WA/Mgt-3.

**Cook, M. E.**  
See Cho, S. M.

**Cook, T. S., Pennick, H. G. and Wells, C. H.**  
Development of an Automated Life Prediction System for Steam Turbine Rotors. 78-WA/DE-15.

**Cooper, C. D.**  
See Hosni, Y. A.

**Cooper, W. E.**  
See Riccardella, P. C.

**Coops, W. J.**  
See Marshall, J. L.

**Corbo, M.**  
See Conti, A.



**Corpron, G. P., Mattar, W. M., Richardson, D. A. and Sgourakes, G. E.**  
Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter. 78-WA/FM-3.

**Cory, J. S.**  
See **Ginell, W. S.**

**Courtney, W. J.**  
Temperature Stability in a 0.9 Cubic Meter Water Bath. 78-WA/TM-2.

**Courtney, W. J., Liber, T. and Bortz, S. A.**  
Three High Pressure Component Failures. 78-Mat-3.

**Coutinho, J. de S.**  
Residual Safety Hazards. 78-WA/DE-23.

**Coutinho, J. de S.**  
Simulation - A Key to Improved Design (A Progress Report on a Case Study) 78-DE-10.

**Covington, M. T.**  
Pipeline Rupture Detection and Controls. 78-Pet-54.

**Cowan, R. G.**  
See **Allen, C. R.**

**Cowie, W. D.**  
See **Tiffany, C. F.**

**Crawford, A. R.**  
See **Bartok, W.**

**Creates, D. H. and Vijay, D. K.**  
Structural Design of Piping for CANDU Nuclear Stations. 78-NE-1.

**Creswick, F. A.**  
See **Saxton, M. J.**

**Cripps, R. A.**  
See **Apostolids, M.**

**Crisp, J. N.**  
Dynamic Analysis of a Roller Coaster. 78-DE-W-5.

**Crisp, J. N.**  
See **Bandow, H. E.**

**Crossland, B.**  
See **Ford, H.**

**Cruise, T. A. and Meyer, T. G.**  
A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading. 78-WA/GT-14.

**Curran, R.**  
See **Shockley, D. A.**

**Curtis, R. H.**  
See **Bjerklie, J. W.**

**Cuzzi, J. R.**  
See **Lenox, J. B.**

**Czerwinski, F. H.**  
Characteristics of a Dry, Subsea Well Completion. 78-Pet-41.

## D

**Dahlberg, R. C.**  
See **Stewart, H. B.**

**Dakin, J. T. and So, R. M. C.**  
The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis. 78-WA/FE-9.

**Dale, J.**  
See **Thoen, T.**

**Daily, J. W.**  
See **Kobayashi, T.**

**Daniel, J.**  
See **Shapiro, N. L.**

**Daniel, K. J., Laurendeau, N. M. and Incropera, F. P.**  
Optical Property Measurements for Suspensions of Unicellular Algae. 78-HT-14.

**Daniels, A.**  
See **Lehrfeld, D.**

**Daniels, E. J.**  
See **Seay, J. G.**

**Dannenmaier, J. H., Barnes, R. H., Sossamon, J. L. and Thomas, A. L.**  
Those Treacherous Continuous Pilots. 78-Pet-45.

**Dantini, E. M.**  
See **Berry, P.**

**Dao, K. C.**  
See **Shockley, D. A.**

**Darlow, M. S., Smalley, A. J. and Ogg, J.**  
Critical Speeds and Response of a Large Vertical Pump. 78-PVP-34.

**Darnell, J. R.**  
See **Laird, A. D. K.**

**Das, M. K., Lui, S. W. and Tobias, S. A.**  
Die Wear Characteristics in High Speed Cropping. 78-WA/Prod-2.

**Dauntun, N. G.**  
See **Mah, R. W.**

**Davenport, R. J.**  
See **Schubert, F. H.**

**Davis, R. L. and Webster, W. D.**  
Finite Element Analysis of Bourdon Tubes. 78-PVP-67.

**Davis, R. W., Moore, E. F., Mattingly, G. E. and Miller, R. W.**  
Numerical Solutions for Turbulent, Swirling Flow Through Target Flowmeters. 78-WA/FM-4.

**Davis, S. H. and Kinsinger, L. D.**  
The Dependence of the CO<sub>2</sub> Removal Efficiency of LiOH on Humidity and Mesh Size. 78-ENAS-5.

**Dawson, B. E. and Robidart, C. M.**  
Conceptual Design of Large Heat Exchangers for Ocean Thermal Energy Conversion. 78-WA/HT-32.

**Day, W. H.**  
See **Caruvana, A.**

**Day, W. H.**  
See **Homer, M. W.**

**Dayan, J.**  
See **Weiner, D.**

**Dean, G. W.**  
Test Procedures for Establishing the Altitude Performance of Turbofan Engines to Validate Contractual Guarantees. 78-GT-42.

**Deblon, B.**  
Full Load Tests of the 80-MW Gas Turbine V 93.2 Using a Water Brake. 78-GT-68.

**Decker, R. L.**  
FP/1 - A Microcomputer Language for Controlling Hydraulic Systems. 78-DE-W-1.

**DeCorso, S. M.**  
See **Hung, W. S. Y.**

**Degil Esposti, P. L.**  
See **Vallerani, E.**

**DeGreef, J. L., Maes, P. and Johnson, K. W.**  
Operating Experience on Residual Fuel Oil with A W251 Combustion Turbine. 78-GT-104.

**De Hoff, R. L. and Hall, W. E.**  
Optimal Control of Turbine Engines. 78-WA/DSC-33.

**Delf, I. N.**  
See **Anand, D. K.**

**Dekeyser, I.**  
See **Begueler, C.**

**Deksnis, E. B.**  
Seismic Analysis of the Main Steam System for 600 MWe CANDU Stations. 78-PVP-87.

**Delaney, E. F.**  
See **McLean, H. D.**

**Delvin, S. A. and Ricardella, P. C.**  
Fracture Mechanics Analysis of JAERI Model Pressure Vessel Test. 78-PVP-91.

**De Nevers, N.**  
Prevention of Significant Deterioration. 78-TS-3.

**Dent, J. R.**  
Electronic Controls of Gas Turbine Engines in Fighting Vehicles. 78-GT-48.

**De Pietro, S. A.**  
See **Egan, B. A.**

**Derballan, G.**  
See **Thomas, J. M.**

**DeRuyck, J.**  
See **Kool, P.**

**Desai, A. R.**  
Dynamic Characteristics of an Underwater Pipeline. 78-Pet-50.

**Desai, K. J.**  
See **Patel, B. R.**

**Deska, E. W.**  
See **Huang, S. L.**

**Deutsch, S. and Mallory, K. M.**  
Life Sciences in the Shuttle Era. 78-ENAS-34.

**DeWitt, R. L.**  
See **Mehta, L. C.**

**Dibelius, N. R., Touchton, G. L. and Vogt, R. L.**  
Preliminary Design of Three Combustion Concepts to Burn Low Btu Coal Gas in a High Temperature 1600 C (3000 F) Combustion Turbine. 78-GT-71.

**Dickson, W. H.**  
See **Hung, W. S. Y.**

**Dicus, J.**  
See **Kurkov, A.**

**Dimmer, J. E.**  
See **Hazard, H. R.**

**Ditaranto, R. A., Margetich, S. and Miles, J.**  
Experimental Investigation of Simulated Helicopter Fuel Cell Impact Phenomenon. 78-DET-79.

**Dodd, A. B.**  
See **Rieger, N. F.**

**Doering, R. D.**  
See **Hosni, Y. A.**

**Dohner, A. R.**  
Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Drivability Constraint. 78-WA/DSC-25.

**Dollet, J.**  
See **Boullisset, R.**

**Donnelly, T. J.**  
The Service Robot Myths, Benefits, and Needs. 78-JPGC-NE-10.

**Domfield, D.**  
See **Svesta, J. A.**

**Doyle, P. A.**  
See **Pines, H. S.**

**Drapp, D. J.**  
Multimode Leak Detection System. 78-Pet-53.

**Dreyer, H. S.**  
See **Wald, G. A.**

**Drolet, T. S.**  
See **Kenchington, J. M.**

**Dropek, R. K. and Williams, C. R.**  
A Study to Determine Roller Cone Cutter Offset Effects at Various Drilling Depths. 78-Pet-23.

**Due, H. F. and Buchanan, E.**  
The Application of Low Cost Manufacturing Technology to A Turbine Gas Generator. 78-GT-202.

**Dueck, D. D.**  
The Effect of Primary Head Shape on Tubesheet Thickness. 78-PVP-30.

**Dück, G. E.**  
Development of Piston Rings for High Speed Engines in Europe. 78-DGP-18.

**Duss, C. G.**  
Seismic Design Margins for CANDU-PHW Nuclear Power Plants. 78-PVP-38.

**Duff, C. G.**  
See **Asmis, G. J. K.**

**Duff, C. G.**  
See **Aziz, T. S.**

**Duff, C. G.**  
See **Blawas, J. K.**

**Dukelow, S. G. and Lane, C. E.**  
Precise Control: The Key to Minimizing Combustion Air. 78-WA/APC-4.

**Dukkipati, R. V.**  
Kinematic Analysis of a Seven Link Mechanism. 78-DET-55.

**Dullaghan, M. E.**  
See **Wallenberger, F. T.**

**Dumas, R.**  
See **Elena, M.**

**Dunn, J. R.**  
See **Fender, D. A.**

**Dunn, P. F.**  
A Model of MHD Natural-Convection Heat Transfer from a Finite Cylinder. 78-WA/HT-24.

**Dunteman, N. R.**  
See **Kottlin, J. J.**

**Durocher, L. L. and Stango, R. J.**  
Grid Selection and Refinement Procedures in Finite Element Analysis. 78-DE-21.

**Dutt, G. S., Beyea, J. and Sinden, F. W.**  
Attic Heat Loss and Conservation Policy.

**Dwyer, D. L., Lewis, C. H. and Hill, J. A.**  
Laminar, Transitional and/or Turbulent Three-Dimensional Boundary Layers over Arbitrary Blunt-Nosed Bodies Including Surface Curvature Effects. 78-HT-23.

**Dybs, A.**  
See **Wong, K. F.**

**Dykema, O. W.**  
Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers. 78-WA/APC-1.

# E

- Eccleston, R. J.**  
See **Stevens-Guille, P. D.**
- Edgar, D. J.**  
See **Jackman, A. H.**
- Edgerton, R. H.**  
See **Rahman, A. A.**
- Edwards, D. K.**  
See **Arnold, J. N.**
- Edwards, E. F. and Zachariason, R. A.**  
Rail-to Barge Transportation of Coal. 78-WA/MH-6.
- Edwards, P. R., Svenson, F. C. and Chandler, F. O.**  
The Development and Testing of the Space Shuttle Reaction Control Subsystem. 78-WA/Aero-20.
- Egan, B. A., Murphy, B. L., Bendel, W. B. and De Pietro, S. A.**  
Modeling and Monitoring Requirements Implicit in the New PSD Regulations 78-WA/APC-14.
- Egan, G. R. and Cipolla, R. C.**  
Stress Corrosion Crack Growth and Fracture Predictions for BWR Piping. 78-Mat-23.
- Ehrman, C. S. and Burgess, D. S.**  
Maintenance of Clinch River Breeder Reactor Nuclear Island Systems. 78-JPGC-NE-4.
- El-Ariny, A. S.**  
Steady Pressure Gradient Assisted Plane Couette Flow with Temperature Dependent Viscosity. 78-HT-28.
- El-Ariny, A. S.**  
Thermal Development of Flow in the Entrance Region of a Channel with Periodic Boundary Conditions. 78-HT-27.
- Elena, M. and Dumas, R.**  
Turbulence Scales in a Pipe Flow with a Slightly Heated Wall. 78-HT-4.
- Elliott, G. L.**  
See **Strasberg, L.**
- Ellis, F. V.**  
See **Obara, Y.**
- Ellis, J.**  
Small-Scale Design Optimization Using an Interactive Minicomputer. 78-WA/DE-9.
- Elmer, L. A.**  
A High Speed Time Sharing Rotary Switch. 78-WA/DE-20.
- Emerson, T. P.**  
The Application of Foil Air Bearing Turbomachinery in Aircraft Environmental Control Systems. 78-ENAs-18.
- Emery, A. F., Kobayashi, A. S. and Love, W. J.**  
An Analysis of the Propagation of a Brittle Circumferential Crack in a Pipe Subjected to Axial Stresses. 78-PVP-101.
- Emery, A. F.**  
See **Kobayashi, A. S.**
- Emmerling, R. C.**  
Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine. 78-DGP-10.
- Emmerson, C. W.**  
The Centaur Engine: Operational Progress Report. 78-GT-159.
- Engel, F. C., Markley, R. A. and Minushkin, B.**  
Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly. 78-WA/HT-25.
- Engelberger, J. F.**  
Robot Arms for Assembly. 78-WA/DSC-37.
- Engeli, M., Zollinger, H. J. and Allemann, J. C.**  
A Computer Program for the Design of Turbomachinery Blades. 78-GT-36.
- Engelman, H. W., Guenther, D. A. and Silvis, T. W.**  
Vegetable Oil as a Diesel Fuel. 78-DGP-19.
- England, G. C.**  
See **Heap, M. P.**
- Epstein, H. I. and Buzek, J. R.**  
Design of Pontoons for Floating Roofs. 78-PVP-111.

- Epstein, M., Linehan, J. H., Hauser, G. M., Swedish, M. J., Lambert, G. A. and Stachyra, L. J.**  
Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet. 78-WA/HT-28.
- Erdman, A.**  
See **Hagan, D.**
- Erez, A. and Shitzer, A.**  
Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monocative Electrocoagulation. 78-WA/HT-66.
- Erlan, F. F.**  
See **Oehlbeck, D. L.**
- Erlan, F. F.**  
See **Tadros, S. E.**
- Esken, J. H., Mann, J. W. and Whitehead, A.**  
A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam. 78-WA/Ener-3.
- Evans, G. H. and Plumb, O. A.**  
Natural Convection from a Vertical Isothermal Surface Imbedded in a Saturated Porous Medium. 78-HT-55.
- Every, R. L. and Carter, D. A.**  
Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce Emissions. 78-Pet-27.
- Ezekoye, L. I.**  
A Simplified Method for Calculating the Natural Frequency of Valve Superstructures. 78-PVP-4.

# F

- Fabris, G. and Pierson, E. S.**  
The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator. 78-WA/HT-33.
- Fair, C. E.**  
See **Cho, S. M.**
- Faietti, D. W.**  
See **Kreid, D. K.**
- Farag, I. H.**  
See **Sarofim, A. F.**
- Farr, M. K.**  
See **Mehta, L. C.**
- Fearon, J. G.**  
Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives. 78-DGP-15.
- Feistauer, M.**  
See **Stasny, M.**
- Felix, P. C.**  
Problems and Operating Experiences with Gas Turbines Burning Residual and Crude Oils. 78-GT-103.
- Felberg, M.**  
Piston Ring Scuffing - A Multiparameter Investigation. 78-DGP-14.
- Fender, D. A. and Dunn, J. R.**  
A Theoretical Analysis of Solar Collector/Storage Panels. 78-WA/Sol-11.
- Ferrara, A. A.**  
See **Haslett, R. A.**
- Fettahiloglu, O. A. and Tabi, R.**  
Effect of Transverse Shearing Deformations on the Coupled Twist-Bending of Curved Beams. 78-PVP-102.
- Fichter, E. F. and Hunt, K. H.**  
Algebraic Trochoids - Classification, Transformations, and Certain Properties. 78-DET-57.
- Fields, R. A.**  
See **Siegel, W. H.**
- Filippi, F., Ledford, O. C. and Vallerani, E.**  
An Experiment Cooling Loop for Spacelab Payloads. 78-ENAs-29.
- Filippov, G. A. and Povarov, O. A.**  
Problems of Moisture Separation in Wet Steam Turbines. 78-WA/GT-4.
- Findley, G. E.**  
See **Spence, J.**
- Finkelstein, A. R.**  
See **Chandler, A. L.**
- Florito, R. J.**  
See **Roberts, P. B.**
- Fisher, D. G.**  
See **Seborg, D. E.**
- Fisher, U.**  
See **Benson, R. S.**
- Fistere, J.**  
See **Williamson, D.**
- Fitzgerald, R. and Anderson, R.**  
KINE-FRAC: A New Approach to Well Stimulation. 78-Pet-25.
- Fivel, H. J.**  
Liquid Metal Heat Pipe Performance on the Presence of a Transverse Magnetic Field. 78-ENAs-20.
- Fleishman, L. A.**  
JETFOIL In-Service Experience. 78-GT-91.
- Fletcher, F. B. and Smith, Y. E.**  
Mn-Mo C-90 Grade Casing Steels. 78-Pet-2.
- Flugel, C. W.**  
See **Reysa, R. P.**
- Fohey, M. F., Sauer, R. L., Westover, J. B. and Rockefeller, E. F.**  
Food Packages for Space Shuttle. 78-ENAs-13.
- Fonseca, G. F.**  
A Biophysical Model for Evaluating Auxiliary Heating and Cooling Systems. 78-ENAs-33.
- Ford, H., Crossland, B. and Watson, E. H.**  
Thoughts on a Code of Practice for Forged High Pressure Vessels of Monobloc Design. 78-PVP-62.
- Forster, L. L. and Pietruszkiewicz, J.**  
History and Development of Condensers at the Geysers Geothermal Power Plant. 78-JPGC-Pwr-18.
- Foster-Pegg, R. W.**  
Gas Compression in Combined Cycles with Gasification. 78-GT-175.
- Fowler, J. R., Bridwell, M. C., Wink, R. E. and Shah, N.**  
Development of Deviation Control Tool. 78-Pet-58.
- Fox, G. L.**  
Fuel Porosity and Crack Effects on Transient Overpower Analysis. 78-PVP-52.
- Fox, J. N. and Wei, B. C.**  
Core Mechanics and Configuration Behavior of Advanced LMFBR Core Restraint Concepts. 78-PVP-49.
- Fradin, C.**  
Analysis of the Flow Field in a Radial Compressor. 78-GT-7.
- Fraize, W. and Lewis, J.**  
Technical and Economic Objectives for the Development of Advanced Combined Cycles for Use With Coal-Derived Fuels. 78-GT-101.
- Förster, S. and Kleemann, M.**  
Compact Metallic and Ceramic Recuperators for Gas Turbines. 78-GT-62.
- Frank, F. J.**  
See **Kiltzes, A. S.**
- Franz, H. L.**  
See **Ortolano, R. J.**
- Franz, K.**  
See **Wallenberger, F. T.**
- Freedman, M.**  
Erosion and Its Effect on a Water-Cooled Turbine. 78-GT-123.
- Frei, O.**  
See **Ren, O.**
- Freund, C. J.**  
Advancement by Judgment. 78-WA/Mgt-2.
- Frickson, A. F., Nablo, J. C. and Panzera, C.**  
Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications. 78-WA/GT-16.
- Friedlander, B.**  
Estimation Theory and Its Role in Optimal Control. 78-WA/DSC-2.
- Friedrich, R.**  
See **Hempel, H.**
- Friesen, E. N.**  
Measurement of Performance in an Engineering Environment. 78-WA/Mgt-8.
- Fruttschi, H. U.**  
Rapid Positive Load Changes by Gas Injection in Closed Gas Turbine Cycles. 78-GT-8.
- Fujie, K.**  
See **Torii, T.**
- Fukuda, M.**  
See **Nara, Y.**

- Fukumoto, H., Mizutani, H., Okamoto, H. and Yoshimura, S.**  
Remotely Operated Ultrasonic Testing System. 78-NE-3.
- Fukutomi, J.**  
See **Nakase, Y.**
- Fulachier, L.**  
Spectral Analogy Between Temperature and Velocity Fluctuations in Various Turbulent Flows. 78-HT-2.
- Fuller, R. H. and Sullivan, D.**  
Energy Consumption and Conservation in University Buildings. 78-WA/PEM-4.

## G

- Gabrielson, J. E.**  
See **Langsjoen, P. L.**
- Ganic, E. N.**  
See **Yung, D.**
- Gardner, B. E. and Thompson, G. H.**  
The CH-46 Rotor Blade Transition from Metal to Composite Materials. 78-WA/Aero-9.
- Garg, D. P.**  
The National Energy Plan and Solar Energy Technology. 78-TS-2.
- Garg, V. K.**  
See **Low, E. M.**
- Gari, H. N.**  
See **Leohrke, R. I.**
- Garrett, M. F.**  
Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars. 78-WA/RT-18.
- Gatzoullis, J.**  
Synthetic Fuels Derived from Coal for Marine Applications. 78-GT-20.
- Gaus, M. P.**  
Anatomy of Researching Projects Objective, Organization, Delivery. 78-DET-72.
- Gehlen, P. C.**  
See **Hoagland, R. G.**
- Gehri, D. C.**  
See **Katz, B.**
- George, P. T. and Parker, A. T.**  
An Evaluation Technique for Determining the Cost Effectiveness of Condition Monitoring Systems. 78-GT-166.
- Gershon, I. J.**  
See **Price, J. L.**
- Gharmalkar, D. R. and Anderson, E. E.**  
Optical Design and Performance of an Inverted, Segmented Mirror Solar Concentrator. 78-HT-32.
- Ghosh, A.**  
See **Pajouhi, K.**
- Giannuzzi, A. J.**  
See **Kass, J. N.**
- Gierling, L. P.**  
An Automated Method for the Continuous Determination of Total Sodium in Fuel Oil. 78-GT-92.
- Gil, R. A.**  
See **Svestka, J. A.**
- Gilbert, L. F.**  
See **Opel, A. E.**
- Gilbert, N. and Polani, J. R.**  
Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads. 78-PVP-110.
- Gillis, R. F. and Johncock, A. W.**  
A Discussion of the TRI-SEN M-300 Electronic Governor and its Possible Impact on Energy. 78-DGP-22.
- Gilpin, R. R., Hirata, T. and Cheng, K. C.**  
Longitudinal Vortices in a Horizontal Boundary Layer in Water Including the Effects of the Density Maximum at 4°C. 78-HT-25.
- Ginelli, W. S., McNichols, J. L. and Cory, J. S.**  
Low-Grade Thermal Energy-Conversion Joule Effect Engines. 78-ENAS-7.
- Glaub, J. C. and Trezek, G. J.**  
Thermal Characteristics of Hydroponic Growing Beds. 78-WA/HT-53.

- Glazik, J. L.**  
Dynamic Finite Element Analysis of Cracked Bodies. 78-PVP-94.
- Gleich, D.**  
High Performance Positive Expulsion Tankage and Pressure Vessel Constructions. 78-WA/Aero-19.
- Goar, D.**  
See **Risch, D. M.**
- Golan, I.**  
See **Guenther, D. A.**
- Golan, A. S.**  
Effective Reliability Testing and Growth Measurement. 78-WA/Aero-21.
- Gold, M.**  
See **Blazewicz, A. J.**
- Golden, R. D.**  
See **Gross, M. B.**
- Gonzalez, J. I.**  
An Approach to Solving Controls Compartment Heating Problems on Air-Launched Missiles. 78-ENAS-12.
- Goodling, E. C.**  
Flexibility Analysis of Buried Pipe. 78-PVP-82.
- Goolsby, D. K.**  
See **Marshall, J. L.**
- Gordon, J. T.**  
See **Gross, M. B.**
- Gore, D. C.**  
See **Chapel, F. G.**
- Goshorn, K. D. and Krodell, A. L.**  
An Accelerated Durability Test Program for Diesel Truck Engines. 78-DGP-23.
- Goss, W. P.**  
See **Carlson, T. C. G.**
- Gottfredson, R. K.**  
Torpedo Propulsion Systems. 78-WA/Aero-13.
- Goulas, A. and Baker, R. C.**  
Through Flow Analysis of Centrifugal Compressors. 78-GT-110.
- Govdy, G. D.**  
See **Matzie, R. A.**
- Goyal, M. R.**  
Simulation of a Turbocharged Diesel Engine to Predict the Transient Response. 78-DGP-11.
- Grady, P. L.**  
See **Montgomery, T. G.**
- Graham, J. W.**  
See **Sinclair, A. R.**
- Graham, L. and Stice, J.**  
Solar Collector Storage Panel. 78-WA/Sol-12.
- Gray, R. E., Buban, E. E. and Stein, R. L.**  
A Lightweight Positive Pressure Rescue Breathing Apparatus. 78-ENAS-35.
- Green, M. A.**  
See **Pines, H. S.**
- Greene, J. D.**  
See **Gupta, B. S.**
- Greenfield, L. P., Wolf, E. J. and Hengel, M. F.**  
The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars. 78-WA/RT-8.
- Greenlee, W. J.**  
See **Niggemann, R. E.**
- Gregory, N.**  
See **Zollinger, E.**
- Greja, F. J.**  
See **Blaine, D. G.**
- Grelecki, C. J.**  
See **Allen, C. R.**
- Griffiths, J. A.**  
See **Simonen, F. A.**
- Grigoriu, M.**  
See **Turkstra, C.**
- Groimes, M. A.**  
See **Chen, W. L.**
- Gross, M. B., Hofmann, R., Gordon, J. T. and Golden, R. D.**  
Fluid-Structure Interaction Calculations for Cylinders Impacting a Water Pool. 78-PVP-59.
- Grover, L. K.**  
See **Weaver, D. S.**
- Guhler, M.**  
See **Sallet, D. W.**
- Guenther, D. A., Golan, I. and Baker, G. R.**  
Management of the Product Liability Engineer. 78-WA/Mgt-4.

- Guenther, D. A.**  
See **Engelman, H. W.**
- Günther, J.**  
See **Becker, B.**
- Guins, S.**  
Establishment of Dampening Required for Control of Railroad Truck Hunting. 78-WA/RT-17.
- Gunderson, R. H. and Lunde, P. A.**  
Deepwater Production Risers. 78-Pet-13.
- Gupta, A. K.**  
Rational and Economical Multicomponent Seismic Design of Piping Systems. 78-PVP-84.
- Gupta, B. S., Green, J. D. and Walsh, W. K.**  
Stabilization of Crimp in Bulked Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers. 78-Tex-11.
- Gupta, P. K.**  
DREB: A New Tool for Rolling Bearing Performance Simulation. 78-DE-15.
- Gwinn, J. M. and Waal, J. C.**  
Modal Summing Rules for Seismic Qualification. 78-PVP-32.
- Gyobu, I.**  
See **Mishina, H.**
- Gyorki, J. R.**  
See **Yang, P. Y.**

## H

- Haberstroh, R. D.**  
See **Leohrke, R. I.**
- Haberstroh, R. D.**  
See **Prenger, F. C.**
- Haemer, E. J.**  
See **Ruzz, J. I.**
- Haft, A. J.**  
See **Roy, J. G.**
- Hagan, D., Harvey, D., Erdman, A. and Tacheney, J.**  
Rapid Algorithms for Kinematic and Dynamic Analysis of Planar Rigid Linkages with Revolute Joints. 78-DET-64.
- Hahn, G. T.**  
See **Hoagland, R. G.**
- Hajnal, T. E.**  
Economic Evaluation Technique of Selecting Turbines for Natural Gas Pipelines. 78-GT-67.
- Halbfoster, J.**  
See **Knight, J. T.**
- Hall, J. L., Stevens, G. A., Joensen, A. W. Van Meter, D. B. and Shanks, H. R.**  
Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixture. 78-WA/APC-2.
- Hall, R. B.**  
See **Maher, W. E.**
- Hall, R. E.**  
See **Bartok, W.**
- Hall, R. E.**  
See **Hunter, S. C.**
- Hall, W. E.**  
See **Dehoff, R. L.**
- Halstead, D. M.**  
See **Randall, S. E.**
- Hama, Y.**  
See **Nakase, Y.**
- Hamed, A.**  
See **Khalil, I.**
- Hamed, A.**  
See **Tabakoff, W.**
- Hammitt, F. G.**  
See **Krzeczowski, S.**
- Hancinsky, O. A.**  
Feasibility of Local Stress Relieving Close to Main Shell of a Large Vessel. 78-NE-2.
- Hanks, N. L.**  
Employee Performance Appraisal. 78-WA/Mgt-1.
- Hannah, R. R., Harrington, L. and Anderson, R. W.**  
A Study of Bingham Plastic Flow for Use as a Temporary Diverting Agent in Hydraulic Fracturing. 78-Pet-36.
- Hannemann, R. J.**  
See **Sallet, D. W.**

- Hanrahan, E. J.**  
Nonproliferation Alternative Systems Assessment Program (NASAP) - An Overview. 78-WA/NE-10.
- Hanson, M. E., Anderson, G. D. and Shaffer, R. J.**  
Theoretical and Experimental Research on Hydraulic Fracturing. 78-Pet-49.
- Hardenberg, H. O. and Kocher, J. M.**  
Air Consumption and Nitrogen Oxide Emissions of Charge Cooled Engines. 78-DGP-12.
- Hardenberg, H. O. and Bergmann, H. K.**  
The Influence of Cylinder Cutoff on Fuel Consumption and Emissions of Diesel Engines. 78-DGP-13.
- Harned, T. J.**  
See **Taft, C. K.**
- Harrington, L.**  
See **Hannah, R. R.**
- Harris, H. D.**  
See **Pick, R. J.**
- Harris, L.**  
See **Bornstein, B.**
- Harris, S. D.**  
See **Pepper, D. W.**
- Harrison, P. G.**  
A Digital Fuel Control System for Gas Turbines. 78-GT-99.
- Hartnett, M. J., Tharp, T. and Palazzotto, A. N.**  
A New Approximate Approach for Elastic Body Contact in Roller Bearings. 78-DE-18.
- Hartung, H. F., Burns, D. J. and Pindera, J. T.**  
Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C. 78-NE-12.
- Harvey, D.**  
See **Hagan, D.**
- Hasielt, R. A., Kosson, R. L., Ferrara, A. A. and Roukis, J. G.**  
Thermal Energy Storage Heat Exchanger Design. 78-ENAS-30.
- Hassett, S. E.**  
See **Cho, S. M.**
- Hauser, G. M.**  
Epstein, M.
- Hawthorne, J. R.**  
Significance of Delta Ferrite Content to Fatigue Crack Growth Resistance of Austenitic Stainless Steel Weld Deposits. 78-PVP-9.
- Hayakawa, T.**  
See **Takemoto, M.**
- Haynie, H. T.**  
The Formal Tradeoff Study as a Mechanical Design Tool. 78-DE-4.
- Hazard, H. R., Barrett, R. E., Trayser, D. A., Webb, P. R. and Dimmer, J. E.**  
Field Studies of Staggering in Tangentially Fired Boiler Furnaces - Part 1, Labadie Field Trial. 78-WA/Fu-10.
- Healey, A. J.**  
See **Nathoo, N. S.**
- Heap, M. P., England, G. C., Lee, J. W., Pershing, D. W. and Martin, G. B.**  
Combustion Modification Pollutant Control Techniques for Industrial Boilers - The Influence of Fuel Oil Properties and Atomization Parameters. 78-WA/APC-13.
- Heare, J.**  
See **Schmidt, P. S.**
- Hedrick, J. K.**  
See **Sinha, P. K.**
- Heidebrecht, A. C., Tso, W. K., Wilson, J. and Symmons, W. R.**  
Seismic Qualification Testing for Shutoff Mechanism for CANDU Reactor. 78-PVP-41.
- Helfenstein, H.**  
Development of Liquid Fuel System for Extended Operation of Industrial Gas Turbines. 78-Pet-4.
- Heller, F. J.**  
Latest Engineering in Tank Car Design. 78-WA/RT-11.
- Hempel, H. and Friedrich, R.**  
Profile Loss Characteristics and Heat Transfer of Full Coverage Film-Cooled Blading. 78-GT-98.
- Hemsworth, M. C. and Zipkin, M. A.**  
Making Turbofan Engines More Energy Efficient. 78-GT-198.
- Hendricks, R. C. and Simoneau, R. J.**  
Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region. 78-WA/HT-37.
- Hengel, M. F.**  
See **Greenfield, L. P.**
- Herald, M. J.**  
See **Nof, S. Y.**
- Heronemus, W. E.**  
See **McGowan, J. G.**
- Hersh, S., Carr, R. C. and Hurley, J. F.**  
The Effects of Smoke Suppressant and Corrosion Inhibiting Fuel Additives on the Particulate and Gaseous Emissions from a Utility Gas Turbine. 78-GT-64.
- Hesje, R. C.**  
See **Richard, C. D.**
- Hesketh, H. E.**  
See **Sweltzer, T. A.**
- Hewett, T. A., Hill, D. C. and McCullough, R. W.**  
Design of High Efficiency Flat Plate Solar Collectors for Space and Water Heating. 78-DE-7.
- Hicks, D. J.**  
Hot Tapping of Ethylene Pipelines. 78-Pet-1.
- Hilding, R. K.**  
See **Thoms, R. L.**
- Hill, D. C.**  
See **Hewett, T. A.**
- Hill, J. A.**  
See **Dwoyer, D. L.**
- Hillberry, B. M.**  
See **Zachman, N. J.**
- Hinkle, S.**  
See **Schmidt, W.**
- Hirasawa, S.**  
See **Torii, T.**
- Hirati, T.**  
See **Gilpin, R. R.**
- Hirsch, Ch.**  
See **Kool, P.**
- Hirt, M.**  
Advanced Industrial Turbine Gear Calculation Methods. 78-GT-174.
- Hoagland, R. G., Gehlen, P. C., Rosenfield, A. R. and Hahn, G. T.**  
Analysis of Crack Arrest in Reactor Pressure Vessels. 78-MAT-16.
- Hodge, B. K.**  
Extended Mixing-Length Hypothesis Applications to Transpired or Roughwall Compressible Boundary Layers. 78-HT-22.
- Hodge, R. I., Wells, N. S. and Licht, H.**  
Pre-service and In-service Inspection - Research and Development in Support of the Canadian Nuclear Power Program. 78-PVP-23.
- Hoffman, M. A.**  
See **Baughn, J. W.**
- Hofmann, R.**  
See **Gross, M. B.**
- Holbrook, G. E. and Rosen, G.**  
Evolution of the Turboprop for High Speed Air Transportation. 78-GT-201.
- Hollander, H. I. and Kleffer, J. K.**  
Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF - An ASTM Program. 78-WA/Fu-8.
- Hollingsworth, L. M.**  
See **Tate, M. C.**
- Holtworth, B. R. and Steele, R. K.**  
Feasibility Study of On-Site Flame Hardening of Rail. 78-RT-8.
- Holmes, M.**  
See **Hurry, M. F.**
- Holmes, R. E.**  
See **Zeran, F.**
- Holz, P. P.**  
Half-Bead Weld Repairs for In-Service Applications. 78-PVP-10.
- Honda, T. and Kanzawa, A.**  
Decay of the Argon Plasma Jet Surrounded by Ar, He, N<sub>2</sub> and H<sub>2</sub> Gases. 78-HT-12.
- Hondius, H. and Meyer, R. H.**  
Ten Years' Engineering Development in Gas Turbine Driven Natural Gas Compressor Stations. 78-GT-74.
- Hopkins, D. C. and Chiang, C. W.**  
Limitations of Solar Assisted Heat Pump Systems. 78-WA/Sol-1.
- Horne, R. N.**  
Three-Dimensional Natural Convection in a Confined Porous Medium Heated from Below. 78-HT-56.
- Horner, M. W., Smith, D. P., Day, W. H. and Cohn, A.**  
Development of A Water-Cooled Gas Turbine. 78-GT-72.
- Horton, T. E.**  
See **Cason, C.**
- Horton, T. L. O.**  
See **Kuo, S. C.**
- Hoskins, E. R.**  
See **Shapiro, L. H.**
- Hosni, Y. A., Doering, R. D. and Cooper, C. D.**  
The Economics of Energy Management Systems in State Buildings in Florida. 78-WA/PEM-1.
- Hottel, H. C.**  
See **Sarofim, A. F.**
- Hover, J. G. and Simmons, R. T.**  
PMS - An Effective Management System for Power Plant Engineering Design. 78-WA/Mgt-6.
- Howell, R. H. and Sauer, H. J.**  
Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems. 78-WA/HT-62.
- Hsu, Y. K.**  
Laminar Film Condensation Over a Vertical Circular Cylinder with Effect of Electrical Field. 78-WA/HT-49.
- Huang, S. L., Richey, R. J. and Deska, E. W.**  
Cross Reinforcement in a GR/EP Laminate. 78-WA/Aero-7.
- Hubbard, M. and Brewer, J. W.**  
Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design. 78-WA/Sol-14.
- Huffstetter, W. J. and Rummel, J. A.**  
Life Sciences Experiments in the First Spacelab Mission. 78-ENAS-26.
- Huggett, B. M. and Austin, G. J.**  
Prospects for the Gas Turbine in the U.K. Gas Transmission System. 78-GT-53.
- Hughes, D. A.**  
See **Kass, J. N.**
- Hughes, R. O.**  
Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors. 78-WA/Sol-4.
- Hullinger, D. P.**  
Power Plant Equipment Reliability. 78-JPGC-Pwr-8.
- Hume, P.**  
See **Reynolds, R.**
- Hung, W. S. Y., Dickson, W. H. and DeCorso, S. M.**  
Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor. 78-WA/GT-10.
- Hunt, K. H.**  
See **Fichter, E. F.**
- Hunt, S. R.**  
See **Berry, W. E.**
- Hunter, S. C., Hall, R. E. and Carter, W. A.**  
Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes. 78-WA/APC-8.
- Hurley, J. F.**  
See **Hersh, S.**
- Hurry, M. F. and Holmes, M.**  
Military Engine Usage Monitoring Developments in the United Kingdom. 78-GT-65.
- Hutter, M.**  
See **Suhner, O. H.**
- Hwang, C. L.**  
See **Konz, S.**
- Hwang, I. T.**  
Buoyancy Induced Convection Flow in Porous Media with Heat Source. 78-HT-57.
- Hwang, J. B.**  
See **Krzeczowski, S.**



**Ibrahim, Z. N. and Kitz, G. T.**

Evaluation of the Functional Capability of ASME Section III Class 1, 2 and 3 Piping Components. 78-PVP-83.

**Ihnen, M. H.**

See **McLean, D. H.**

**Iino, T., Sato, H. and Miyashiro, H.**

Hydraulic Axial Thrust in Multistage Centrifugal Pumps. 78-WA/FE-12.

**Imatake, T.**

See **Nishikawa, H.**

**Impagliazzo, A. M. and Bell, R. J.**

Steam Surface Condenser Operating and Design Considerations. 78-JPGC-Pwr-19.

**Incropera, F. P.**

See **Daniel, K. J.**

**Ingils, M. E.**

See **Baxendale, B. V.**

**Inoue, M.**

Radial Vaneless Diffusers: A Re-Examination of the Theories of Dean and Senoo and of Johnson and Dean. 78-GT-186.

**Inubushi, M.**

See **Nakase, Y.**

**Ishii, M.**

See **Chen, W. L.**

**Isigaki, T.**

See **Kohzu, M.**

**Iten, O. and Frei, O.**

Prototype Tests of a New 5 MW Industrial Gas Turbine. 78-GT-131.

**Itoh, M.**

See **Maya, T.**

**Iwamoto, T.**

See **Nakase, Y.**

## J

**Jackman, A. H. and Edgar, D. J.**

The Nuclear Equipment Arrangement of Darlington Generating Station. 78-NE-11.

**Jackson, C.**

Design Audit, Testing & Commissioning of Two 9000 Horsepower Centrifugal Air Compressor Trains. 78-Pet-48.

**Jackson, D.**

See **Barthelemy, R.**

**Jackson, G. W.**

Availability Engineering for Coal-Fired Power Projects. 78-PVP-12.

**Jackson, P. E.**

Some Considerations on the Application of Chain Drives to Diesel Engines. 78-DGP-4.

**Jackson, R. J.**

See **Chan, D. P.**

**Jaffe, W.**

Pattern Control Actuator Design for Electronically Controlled sewing Machine. 78-DE-13.

**Jagels, R. E.**

See **Sampson, R. C.**

**James, L. A.**

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steel - A Design Approach. 78-PVP-97.

**James, L. A.**

See **Mills, W. J.**

**Janna, W. S.**

See **Zatarain, A. M.**

**Jaw, L.**

PWR Normal Shutdown Transient Response Using Runge-Kutta's Technique. 78-JPGC-Pwr-1.

**Jeffers, T.**

Marine Gas Turbines in the Royal Navy 1976-1978. 78-GT-197.

**Jeldness, R.**

See **Bilgen, E.**

**Jendrzyczek, J. A.**

See **Chen, S. S.**

**Jendrzyczek, J. A.**

See **Shin, Y. S.**

**Jenkins, P. E. and Young, M. F.**

A Thermal Loss Coefficient for an Evacuated and Non-Evacuated Cylindrical Collector Receiver Tube. 78-WA/Sol-3.

**Jenkins, P. E.**

See **Young, M. F.**

**Jenkins, P. E.**

See **Zeren, F.**

**Jesick, J. F.**

See **Shapiro, N. L.**

**Joensen, A. W.**

See **Hall, J. L.**

**Johncock, A. W.**

See **Gills, R. F.**

**Johnson, B. M.**

See **Kreid, D. K.**

**Johnson, D. P.**

See **Lamping, G.**

**Johnson, E. T., Smith, K. F. and Marstiller, J. K.**

20 HP Mini-RPV Demonstrator Engine Programs. 78-GT-200.

**Johnson, K. W.**

See **DeGroot, J. L.**

**Johnson, R. C.**

See **Matzie, R. A.**

**Johnson, T. R.**

See **Chow, L. S. H.**

**Jones, A. H.**

See **Abou-Sayed, A. S.**

**Jones, O. C.**

See **Abuaf, N.**

**Jones, R. G.**

See **Peters, W. J.**

**Jones, T. V. and Russell, C. M. B.**

Heat Transfer Distribution on Annular Fins. 78-HT-30.

**Joplin, J. L.**

Considerations for the Purchase of Gas Gathering Compressors. 78-Pet-20.

## K

**Kabiri-Bamoradian, K.**

See **Arpaci, V. S.**

**Kahr, J. C.**

See **Blaine, D. G.**

**Kaji, H.**

See **Nishikawa, H.**

**Kamchi, J. S. and Compitello, F. E.**

Propulsion Test Facilities Technical Capabilities and International Use. 78-GT-184.

**Kanzawa, A. and Ohmiya, M.**

Effects of Joule Heating on Plasma Heat Transfer. 78-HT-11.

**Kanzawa, A.**

See **Honda, T.**

**Kao, T. T.**

See **Cho, S. M.**

**Kaplan, H. and Abeles, F.**

Firefighters Integrated Response Equipment System. 78-ENAS-39.

**Kamopp, D. C.**

Are Active Suspensions Really Necessary? 78-WA/DE-12.

**Kasper, K. R.**

Electronic Hardware and Its Impact on Numerical Control. 78-WA/DSC-16.

**Kass, J. N., Giannuzzi, A. J. and Hughes, D. A.**

Radiation Effects in Boiling Water Reactor Pressure Vessel Steels. 78-Mat-11.

**Kasten, R. E.**

See **Madhwal, A. N.**

**Kataoka, K., Komai, T. and Nakamura, G.**

Enhancement Mechanism of Mass Transfer in a Turbulent Impinging Jet for High Schmidt Numbers. 78-HT-5.

**Katsumata, I.**

See **Maya, T.**

**Katz, B., Gehri, D. C. and Oldenkamp, R. D.**

The Atomics International Open Loop and Closed Loop Aqueous Carbonate Processes - A Current Assessment. 78-JPGC-Pwr-15.

**Katz, Y.**

Design Considerations for Future Heat Recovery Boilers Aboard Naval Vessels. 78-GT-162.

**Kauzlarich, J. J.**

See **Shaddy, M. A.**

**Kawabe, N.**

See **Nishikawa, H.**

**Kawashima, Y.**

See **Ariga, I.**

**Keane, M. J.**

See **Sweet, L. M.**

**Kenchington, J. M., Stewart, W. B. and Drolet, T. S.**

An Evaluation of Liquid Radioactive Waste Treatment Systems for CANDU-PHW Reactors. 78-JPGC-NE-17.

**Kenna, E. J.**

Industrial Application of a 66,000 Pound per Hour Vibrating Stoker Fired Boiler. 78-IPC-Fu-4.

**Kennedy, J. M.**

See **Belytschko, T.**

**Kettelkamp, D. B.**

See **Zachman, N. J.**

**Khalaf, S.**

See **Baz, A.**

**Khalifa, H. E.**

See **Szewalski, R.**

**Khalil, I., Tabakoff, W. and Hamed, A.**

Viscous Flow Analysis in Mixed Flow Rotors. 78-WA/GT-3.

**Khan, M. R.**

See **Willmert, K. D.**

**Khandani, S. M. H. and Buckley, S. B.**

A Thermic Controller for a Thermic Diode Solar Panel. 78-WA/Sol-9.

**Kieffer, J. K.**

See **Hollander, H. I.**

**Kim, W.**

See **Krzczkowski, S.**

**King, G.**

Decompression of Gas Pipelines During Longitudinal Ductile Fractures. 78-Pet-69.

**Kinoshita, Y.**

See **Senoo, Y.**

**Kinzel, G. and Osborn, C.**

The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions. 78-Pet-40.

**Kircher, J. F.**

See **Saxton, M. J.**

**Kishi, M.**

See **Takemoto, M.**

**Kissinger, L. D.**

See **Davis, S. H.**

**Kitz, G. T.**

See **Ibrahim, Z. N.**

**Kitzes, A. S. and Frank, F. J.**

Impact of Remote Tooling on Occupational Radiation Exposure. 78-JPGC-NE-13.

**Kleeman, M.**

See **Förster, S.**

**Klein, R. E.**

See **Sehitoglu, H.**

**Kleiner, G. N.**

Extended Duration Orbiter Life Support Definition. 78-ENAS-42.

**Klett, M. G.**

See **Stewart, J. T.**

**Knight, J. T. and Halbfoster, J.**

An Evaluation of New Filter/Demineralizer Precoat Materials. 78-JPGC-NE-16.

**Knodel, J. R. and Reed, R. J.**

In Search of Optimum Fuel Savings. 78-WA/Ener-1.

**Ko, P. L.**

Experimental Studies of Tube Fretting in Steam Generators and Heat Exchangers. 78-PVP-22.

**Kobayashi, A. S., Emery, A. F., Love, W. J. and Antipas, A.**

A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner. 78-PVP-95.

**Kobayashi, A. S.**

See **Emery, A. F.**

**Kobayashi, T. and Daily, J. W.**

A Photoelastic Evaluation of the Method of Measuring Crack Arrest Toughness with a Tapered DCB Specimen. 78-Mat-15.

**Kocher, J. M.**

See **Hardenberg, H. O.**

**Koga, T.**

See **Nara, Y.**

Kohzu, M., Chinone, H., Miyake, M., Murashima, K., Yamanaka, K. and Ishigaki, T.  
Research of the XF3-1 Turbofan Engine. 78-GT-199.

Komal, T.  
See Kataoka, K.

Konz, S., Hwang, C. L., Techapatnarat, P. and Tang, J.  
Design Considerations for Dry Ice Garments. 78-ENAS-32.

Kool, O., DeRuyck, J. and Hirsch, Ch.  
The Three-Dimensional Flow and Blade Wake in an Axial Plane Downstream of an Axial Compressor Rotor. 78-GT-66.

Kool, P.  
See Colpin, J.

Kordyban, E.  
Growth of Interfacial Waves in Closed Horizontal Channels. 78-WA/FE-8.

Koren, Y.  
See Massaro, O.

Kosson, R. L.  
See Haslett, R. A.

Kot, C. A.  
See Youngdahl, C. K.

Kotkin, J. J., Williams, H. A. and Dunteman, N. R.  
Higher Fuel Efficiency for EMD Diesel Locomotives. 78-RT-4.

Kotwal, R.  
See Tabakoff, W.

Kovacik, J. M.  
See Wilson, W. B.

Kozluk, M. J.  
Finite Element Analysis of a Cylinder-to-Plate Intersection. 78-PVP-17.

Krasbel, J. S., Baughn, J. W. and McKillop, A. A.  
Isothermal Heat Flux Sensor. 78-WA/HT-14.

Kramer, L. D. and Welsel, M. P.  
Avoiding Corrosion of Steam Turbine Components During Erection and Layup. 78-JPGC-Pwr-5.

Krapp, R.  
See Bamnert, K.

Kreid, D.  
Analysis of Advanced Compressed Air Energy Storage Concepts. 78-HT-53.

Kreid, D. K., Johnson, B. M. and Falletti, D. W.  
Approximate Analysis of Heat Transfer from the Surface of a Wet Finned Heat Exchanger. 78-HT-26.

Krempel, E.  
See Ostergren, W. J.

Kretschmer, D. and Odgers, J.  
A Simple Method for the Prediction of Wall Temperatures in Gas Turbines. 78-GT-90.

Krey, G.  
Bypass Control of Closed-Cycle Gas Turbines. 78-GT-70.

Kring, G. and Spintig, J.  
The SPACELAB Flight Unit Environmental Control/Life Support System. 78-ENAS-14.

Krodel, A. L.  
See Goshorn, K. D.

Krulis, G. E.  
See Spalding, E. G.

Krzczkowski, S., Kim, W., Hammit, F. G. and Hwang, J.-B.  
Investigation of Secondary Liquid Phase Structure in Steam Wake. 78-WA/FE-13.

Kuehn, T. J. and Nawrocki, P. M.  
Accelerating the Commercialization on New Technologies. 78-WA/TS-4.

Kuo, S. C. and Shu, H. T.  
Alternative Closed-Cycle Gas Turbine System Design Considerations for Ship Propulsion Applications. 78-GT-18.

Kuo, S. C., Horton, T. L. O. and Shu, H. T.  
Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation. 78-WA/Sol-2.

Kuo, S. C., Horton, T. L. O., Shu, H. T. and Seng, W. R.  
The Prospects for Lightweight Ship Propulsion Systems. 78-GT-179.

Kurita, M.  
See Nishikawa, H.

Kurkov, A. and Dicus, J.  
Synthesis of Blade Flutter Vibratory Patterns Using Stationary Transducers. 78-GT-160.

Kuwahara, H.  
See Torii, T.

Kwak, Y. K. and Smith, C. C.  
Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs. 78-WA/DSC-30.

**L**

Lacey, P. D.  
See Niggemann, R. E.

LaCroix, A.  
See Conte, F.

Lai, N. W.  
See Audibert, J. M. E.

Laird, A. D. K., Tleimat, B. W., Darnell, J. R. and Smith, G. J.  
Geothermal Power and Water Production Studies at the University of California. 78-WA/Ener-7.

Lakshminarayana, K.  
Mechanics of Form Closure. 78-DET-32.

Lambert, G. A.  
See Epstein, M.

Lamberti, E.  
See Conti, A.

Lamping, G., Johnson, D. P. and Sarian, S.  
Controlled Reluctance Eddy Current Inspection of Steam Turbine Blades. 78-JPGC-Pwr-6.

Lane, C. E.  
See Dukelow, S. G.

Langrana, N. A.  
The Kinematic and Force Analyses of Upper Extremity-Orthosis Systems. 78-DET-51.

Langsjoen, P. L. and Gabrielson, J. E.  
Field Tests of Industrial Stoker Fired Boilers for Emission Control. 78-WA/APC-9.

Larsen, D. C., Walther, G. C., Bortz, S. A. and Ruh, R.  
Screening Properties of Silicon-Base Ceramics for Turbine Engine Applications. 78-WA/GT-12.

Latham, R. F.  
See Richard, C. C.

Lauter, H.  
See Straubel, M.

Laundier, B. E.  
See Baughn, J. W.

Laurendeau, N. M.  
See Daniel, K. J.

Law, C. K. and Law, H. K.  
Thermal Ignition Analysis in Boundary Layer Flows. 78-WA/HT-47.

Law, H. K.  
See Law, C. K.

Lawrie, W. E.  
Advances in Ultrasonics for Inservice Inspection. 78-PVP-39.

Leatham, C. H.  
Co-Generation of Steam and Electrical Energy for a Manufacturing Plant as Affected by Economy of Scale. 78-IPC-Pwr-4.

Ledford, O. C.  
See Filippi, F.

Lee, E. I.  
See Semas, V.

Lee, G. K.  
See Brown, T. D.

Lee, H. Y.  
See Smith, T. F.

Lee, J. W.  
See Heap, M. P.

Lee, M. K.  
See Schubert, F. H.

Lee, Y. and Chen, W. J.  
Effect of Flow Channel Orientation on Rewetting Phenomenon. 78-WA/HT-31.

Lee, Y.  
See Salcudean, M.

Leemhuis, R. S. and Soedel, W.  
Vector Loop Analysis of Wankel Compressors or Engines. 78-DET-1.

Lehrfeld, D. and Daniels, A.  
The Stirling Engine, An Energy Converter for Cogeneration Applications. 78-WA/Ener-4.

Lejay, H.  
See Boullisset, R.

Leman, J. D.  
Maintenance Experience with Sodium Systems at Experimental Breeder Reactor II (EBR-II). 78-JPGC-NE-5.

Le May, I. and Purdy, L. R.  
Alternative Energy Sources and the Developing Nations. 78-WA/TS-3.

Lenox, J. B. and Cuzzi, J. R.  
Accurately Characterizing a Measured Change in Configuration. 78-DET-50.

Lenox, T. G.  
See Barclay, B. A.

Leohrke, R. I., Gari, H. N., Sharp, M. K. and Haberstroh, R. D.  
A Passive Technique for Enhancing Thermal Stratification in Liquid Storage Tanks. 78-HT-50.

Leonard, R. L. and Miller, G.  
Air Policy Analysis for the Development of Western Energy Resources. 78-TS-4.

Lerew, L. E. and Bakker-Arkema, F. W.  
Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products. 78-WA/HT-54.

Letan, R.  
A Parametric Study of a Direct Contact Heat Exchanger. 78-WA/HT-16.

Leung, P. and Booth, L. E.  
Power System Economics: On Evaluation of Availability. 78-JPGC-Pwr-3.

Leung, R. K.  
See Oosthuizen, P. H.

Levesque, C. R.  
The Design Audit Concept in New Product Development. 78-DE-W-2.

Levesque, R. G.  
See Brownstein, M.

Lewis, C. H.  
See Dwyer, D. L.

Lewis, J.  
See Fraize, W.

Lewis, R. I.  
Teaching of the Fluid Mechanics of Turbomachines. 78-GT-161.

Liber, T.  
See Courtney, W. J.

Licht, H.  
See Hodge, R. I.

Lin, C. W.  
OBE Design Effects on Nuclear Power Plant Pressure Vessel. 78-PVP-14.

Linehan, J. H.  
See Epstein, M.

Lingle, R.  
See Abou-Sayed, A. S.

Lipow, M.  
Models for Software Reliability. 78-WA/Aero-18.

Lister, D. H. and Wedlock, M. I.  
Measurement of Emissions Variability of a Large Turbofan Aero-Engine. 78-GT-75.

Liu, C. H. and Pfander, E.  
Heat Transfer in the Anode Region of High Intensity Arcs. 78-HT-9.

Liu, C. H.  
See Baliga, B. R.

Lo, H.  
See Sun, C. T.

Locheed, E. W. and Satterwhite, L. E.  
Selection of Production Controls to Obtain Operating Objectives. 78-Pet-6.

Loeffler, F. J., Smith, R. C. and Vaka, G. A.  
Shiftable and Overland Belt Conveyor Systems in Strip Mining. 78-WA/MH-7.

Loehrke, R. I.  
See Sharp, M. K.

Lohaus, K. L.  
Compact Diesel Engines in Traction Applications. 78-DGP-8.

Longo, F. N.  
See Reardon, J. D.

Lorenz, J. J.  
See Yung, D.

Lou, D. Y. S.  
Heat Conduction Experiments in Rarefied Gases Confined Between Two Concentric Cylinders. 78-HT-34.



Lou, Y. K.  
See Shilling, R. B.  
Love, W. J.  
See Emery, A. F.  
Love, W. J.  
See Kobayashi, A. S.  
Low, E. M. and Garg, V. K.  
The Train Operations Simulator (TOS) - A Tool for  
Railroad Accident Investigation. 78-WA/RT-3.  
Lowe, A. L., ZurLippe, C. F. and Palme, H. S.  
Surveillance Capsule Results from the Oconee  
Class Reactors. 78-Mat-22.  
Lowry, R. A.  
See Shadday, M. A.  
Lu, S. C. H.  
Safety Margins of Containment Structures Under  
Impulsive Loading. 78-PVP-68.  
Lui, S. W.  
See Des, M. K.  
Lukas, M.  
Spectrometric Analysis of Residual Fuel. 78-GT-93.  
Lunde, P. A.  
See Gunderson, R. H.  
Lynch, P. M.  
A Survey of Economic Analyses for Programmable  
Assembly. 78-WA/DSC-17.

## M

McAnge, T. R.  
See Mashburn, W. H.  
McBride, J. P.  
See Carr, R. W.  
McCarty, R. O. and Morgan, F. A.  
The Techniques Involved in the Design, Construc-  
tion, and Operation of a Waterflood Facility in  
South Louisiana Marshlands. 78-Pet-7.  
McCullough, R. W.  
See Hewitt, T. A.  
McDonald, C. F.  
The Closed-Cycle Turbine - Present and Future  
Prospectives for Fossil and Nuclear Heat  
Sources. 78-GT-102.  
McDonald, C. F.  
The Role of the Recuperator in High Performance  
Gas Turbine Applications. 78-GT-46.  
McDonough, J. M.  
See Yao, L. S.  
Macocek, M.  
Metallurgical Causes of Difficulties with Ultrasonic  
Inspection of Austenitic Welds. 78-PVP-8.  
McGee, L.  
See Coalson, H.  
McGowan, J. G., Heronemus, W. E. and Braren,  
R.  
Development of Compact Heat Exchangers for  
Ocean Thermal Energy Conversion (OTEC)  
Systems. 78-WA/HT-34.  
Machacek, S. and Zelenka, T.  
Design and Operation of a Large Diameter (1.67 m)  
Steamline. 78-PVP-86.  
McKenny, L. D.  
See Price, J. L.  
McKillop, A. A.  
See Kraabel, J. S.  
McKinley, D. A.  
See Brown, S. J.  
McLean, D. H. and Ihnen, M. H.  
The Design and Development of an Air-to-Air  
Intercooled Engine for Agricultural Tractor  
Application. 78-DGP-28.  
McLean, H. D., Delancey, E. F. and Patterson, J.  
R.  
One Manufacturer's View of Gas Turbine Service.  
78-GT-49.  
McNichols, J. L.  
See Glinell, W. S.  
McNutt, L. C.  
Nonlinear Transient and Spectrum Response Seis-  
mic Analysis of a Reactor Coolant Pump.  
78-PVP-36.  
McTasney, R., Troha, W. A. and Rio, R. A.  
Turbine Engine Automated Trim Balancing and  
Vibration Diagnostics. 78-GT-129.

Madiwale, A. N., Kasfen, R. E., Wu, S. M. and  
Radkiewicz, R. J.  
Optimal Adaptive Control of Active Recoil  
Mechanisms. 78-WA/DSC-12.  
Maes, P.  
See DeGreef, J. L.  
Mager, T. R.  
See Yancho, S. E.  
Mah, R. W. and Daunton, N. G.  
Vestibular Function Research Aboard Spacelab.  
78-ENAS-25.  
Maher, W. E., Bailey, M. P., Nelson, D. J. and  
Hall, R. B.  
Rear Surface Non-Contact Measurements of Laser  
Target Temperatures. 78-HT-58.  
Mahig, J.  
Multivariable Identification of Some Paper Plant  
Parameters. 79-WA/DSC-4.  
Malay, P. S.  
See Majumdar, S.  
Majumdar, S. and Malay, P. S.  
Hold-Time Sequence Effects on the Elevated-Tem-  
perature Low-Cycle Fatigue of Type 304  
Stainless Steel. 78-WA/PVP-2.  
Mallicott, F. L.  
Boiler Plant Accidents - Four Case Histories.  
78-Pet-46.  
Mallory, K. M.  
See Deutsch, S.  
Mancini, T. R.  
See Matzkanin, R. L.  
Mann, J. W.  
See Eskesen, J. H.  
Mann, L.  
Productivity Factors in Large Plant Maintenance.  
78-WA/Mgt-5.  
Manning, G. B.  
See Caruvana, A.  
Manning, G. B.  
See Mogul, J. M.  
Manny, E. H.  
See Bartok, W.  
Manos, W. P.  
Progress in Railway Mechanical Engineering  
(1977-78 Report of Survey Committee) Cars  
and Equipment. 78-WA/RT-14.  
Manzano, J. J. and Buckley, S. B.  
Cooling Applications of Thermic Diode Panels.  
78-WA/Sol-10.  
Margaree, D. L.  
See Yakut, M. M.  
Margelich, S.  
See Ditaranto, R. A.  
Marinello, M.  
See Mumma, S. A.  
Markley, R. A.  
See Engel, F. C.  
Marmo, J.  
See Nevill, G. E.  
Marron, H. D. and Carleton, R. S.  
The Gas Turbine Waste Heat Recovery System and  
the U.S. Navy. 78-GT-170.  
Marshall, J. L., Coops, W. J., Baxter, W. F. and  
Goolaby, D. K.  
Maintenance and Requalification of a Large  
LMFBR Component. 78-JPGC-NE-1.  
Marstiller, J. K.  
See Johnson, E. T.  
Martin, D. A.  
See Chapel, F. G.  
Martin, F. E.  
Development of Rescue and Escape Breathing  
Apparatus Based on a Chlorate Candle Oxygen  
Source. 78-ENAS-1.  
Martin, G. B.  
See Heap, M. P.  
Martin, H. R.  
Noise Radiated From Hydraulic Circuits. 78-DE-23.  
Martineau, C. and Boyen, J. L.  
Grid Connected Electrical-Thermal (Cogeneration)  
Energy System for University of California,  
Davis, California. 78-GT-134.  
Martinek, F.  
See Buller, M. L.  
Martus, W. E. and Young, W. B.  
Compatibility Study of Piston Ring Coatings and  
Cylinders in Diesel Engines 78-DGP-3.

Marzouk, M.  
See Watson, N.  
Mashburn, W. H. and McAnge, T. R.  
Transferring Technology to Solve Energy Prob-  
lems. 78-DET-76.  
Masom, R. A.  
See Baker, P. D.  
Masri, S. F.  
See Anderson, J. C.  
Massey, O. and Koren, Y.  
The Direct-Search Method in CNC Interpolators.  
78-WA/Prod-40.  
Masters, J. E.  
See Relfanider, K. L.  
Matlar, W. M.  
See Corpron, G. P.  
Matthew, G. K.  
Elementary Synthesis of Damping in Conjunction  
with Planar Mechanisms. 78-DET-49.  
Mattingly, G. E.  
See Davis, R. W.  
Matzke, R. A., Menzel, G. P., Johnson, R. C. and  
Gowdy, G. D.  
Resource Utilization and Design Aspects of the  
Spectral Shift Controlled Reactor. 78-  
WA/NE-8.  
Matzkanin, R. L. and Mancini, T. R.  
Performance Evaluation of the New Mexico State  
University Solar House. 78-WA/Sol-8.  
Maya, T., Katsumata, I. and Itoh, M.  
A Study of Thermal Fatigue Life Prediction of  
Air-Cooled Turbine Blades. 78-GT-63.  
Mayne, R. W.  
See Afmhwala, K. A.  
Mayer, S.  
Conversion of Industrial Plants to Use Coal as Fuel.  
78-IPC-Fu-2.  
Meece, C. E.  
See Price, J. L.  
Mehdizadeh, P.  
See Chen, E. Y.  
Mehls, L. C., Farr, M. K. and Dewitt, R. L.  
Computer Simulation and Verification of I.C. Engine  
Vibration Characteristics. 78-DGP-24.  
Menzel, G. P.  
See Matzke, R. A.  
Meredith, D. and Wiltner, E. A.  
Computer Code for Predicting the Dynamic Re-  
sponse of High Energy Piping, Pressure Ves-  
sels, and Shell Structures Subjected to Tran-  
sient Loads and Impacts. 78-PVP-33.  
Meredith, D. and Wiltner, E. A.  
Transient Response of Thin, Thick, or Sandwich  
Shells and Pressure Vessels Subjected to  
Transient Loads. 78-PVP-35.  
Meroney, R. H.  
Studying the Convective Heat Transfer from a  
Building Model with Infrared Camera Tech-  
niques. 78-WA/HT-58.  
Mersky, R.  
See Zandi, I.  
Metzner, R. C.  
See Shapiro, L. H.  
Meyer, R. H.  
See Hondius, H.  
Meyer, R. H.  
See Prem, L. L.  
Meyer, T. G.  
See Cruse, T. A.  
Micheal, S.  
See Baz, A.  
Mil, T.  
See Takemoto, M.  
Miles, J.  
See Ditaranto, R. A.  
Miller, G.  
See Leonard, R. L.  
Miller, G.  
See Zakkay, V.  
Miller, L. G.  
See Prestwich, S. M.  
Miller, R. W.  
See Davis, R. W.  
Mills, W. J. and James, L. A.  
Effect of Heat-Treatment on Elevated Temperature  
Fatigue-Crack Growth Behavior of Two-Heats  
of Alloy 718. 78-WA/PVP-3.

**Milner, D. A. and Raafat, H.**  
Gear Hobbing Torque and Power. 78-WA/  
Prod-33.

**Milner, D. A. and Raafat, H.**  
Tool Wear and Tool Life Gear Hobbing.  
78-WA/Prod-34.

**Min, B. K.**  
See **Raj, R.**

**Minalga, P. F.**  
A Servo Control System Design for Electronic  
Pattern Control in a Consumer Sewing Ma-  
chine. 78-DE-14.

**Minushkin, B.**  
See **Engel, F. C.**

**Mischler, W. J.**  
Computer Aided Drafting and Applications to Ma-  
terials Handling Engineering. 78-WA/MH-5.

**Mishina, H. and Gyobu, I.**  
Performance Investigations of Large Capacity  
Centrifugal Compressors. 78-GT-3.

**Mitchell, A. S.**  
Heat Transfer by a Corona Wind Heat Exchanger.  
78-WA/HT-43.

**Miyake, M.**  
See **Kohzu, M.**

**Miyashiro, H.**  
See **Iino, T.**

**Mizuki, S., Ariga, I. and Kawashima, Y.**  
Investigation Concerning Rotating Stall and Surge  
Phenomena within Centrifugal Compressor  
Channels. 78-GT-9.

**Mizutani, H.**  
See **Fukumoto, H.**

**Modak, J. P. and Shiwaiker, B. D.**  
Experimental Kinematic Analysis and a New Tech-  
nique of Synthesis of an Elastic Four Bar Chain.  
78-DET-63.

**Modest, M. F. and Soderstrom, K. G.**  
Thermal Design Criteria for Solar Hot Water Sys-  
tems in Tropical Climates. 78-HT-37.

**Moeller, C. E.**  
See **Seamons, L. O.**

**Mogul, J. M., Cole, R. W. and Manning, G. B.**  
Design of a High Efficiency Combined Cycle Elec-  
tric Power Plant for Low Btu Coal-Gas.  
78-GT-125.

**Mohamed, M. A. and Schroeder, J.**  
Stress Intensity Factor Calculations for Circular  
Cracks at the Intersections of Pressurized  
Cylindrical Shells. 78-PVP-24.

**Molin, A.**  
See **Shapiro, N. L.**

**Montakhab, A.**  
Waste Heat Disposal to Air with Mechanical and  
Natural Draft - Some Analytical Design Con-  
siderations. 78-WA/HT-17.

**Montgomery, T. G. and Grady, P. L.**  
The Development of Modern Ballistic Apparatus for  
the Evaluation of Textile Materials Under  
High-Speed Impact. 78-Tex-10.

**Moodie, C. L.**  
See **Wysk, R. A.**

**Moore, E. F.**  
See **Davis, R. W.**

**Moore, F. K.**  
Aerodynamics of the Heat Exchangers and Their  
Arrangement in Large Dry Cooling Towers.  
78-WA/HT-19.

**Moore, F. K.**  
Effects of Aerodynamic Losses on the Performance  
of Large Dry Cooling Towers. 78-WA/HT-18.

**Morgan, F. A.**  
See **McCarty, R. O.**

**Morgan, W. R., Renfrew, D. W. and Rice, R. C.**  
Evaluation of Particulate Emissions from Spreader  
Stoker Boilers. 78-IPC-Fu-1.

**Morizumi, S. J.**  
Comparison of Analytical Model with Approximate  
Models for Total Band Absorption and Its Deri-  
vative. 78-HT-15.

**Morris, A. W. H. and Waldren, N. E. P.**  
A High Temperature Turbine Research Module.  
78-GT-73.

**Moskowitz, S.**  
Design of a Pressurized Fluid Bed Coal Fired  
Combined Cycle Electric Power Generation  
Plant. 78-GT-135.

**Moskowitz, S. L.**  
See **Raj, R.**

**Mottram, A. W. T.**  
The Compact Industrial Gas Turbine Recent Tech-  
nical Improvement. 78-GT-41.

**Mowatt-Larsen, E.**  
Tanktainer - A Portable Bulk Liquid Tank Container  
for Intermodal Service. 78-WA/RT-10.

**Mowatt-Larsen, E.**  
Tanktrain - A High Volume Bulk Liquid Transporta-  
tion System. 78-WA/RT-9.

**Moza, A. K., Shoji, K. and Austin, L. G.**  
The Sticking Temperature and Adhesion Force of  
Slag Droplets from Four Coals on Mild Steel.  
78-WA/CD-1.

**Mozar, C. J.**  
See **Townes, H. W.**

**Mraz, G. J. and Nisbett, E. C.**  
Design, Manufacture and Safety Aspects of Forged  
Vessels for High Pressure Services.  
78-PVP-72.

**Muthyunjaya, T. S. and Raghavan, M. R.**  
Computer-Aided Synthesis of a Two-Degree-of-  
Freedom Planar Linkage for Function Genera-  
tion. 78-DET-30.

**Mudgett, R. E.**  
Mathematical Models for Continuous Dielectric  
Heating of Biological Fluids. 78-WA/HT-13.

**Mukherjee, D. K.**  
Stresses in Turbine Blades Due to Temperature and  
Load Variation. 78-GT-158.

**Mullik, P. R.**  
See **Pillanury, P. W.**

**Mumma, S. A., Ashland, M. and Marinello, M.**  
Major Public Solar Hot Water Heater Technology  
Transfer Program. 78-DET-77.

**Munro, R.**  
See **Parker, D. A.**

**Murashima, K.**  
See **Kohzu, M.**

**Murphy, B. L.**  
See **Egan, B. A.**

**Myers, P. S.**  
See **Uyehara, O. A.**

## N

**Nabio, J. C.**  
See **Frickson, A. F.**

**Naesheim, K. and Rowen, W. I.**  
Operating Experience with the Gas Turbine  
Powered LNG/Ethylene Carrier "LUCIAN."  
78-GT-35.

**Nakamura, G.**  
See **Kataoka, K.**

**Nakano, M.**  
See **Ohtsuka, N.**

**Nakase, Y., Fukutomi, J., Inubushi, M., Watan-  
abe, T., Hama, Y. and Iwamoto, T.**  
A Quasi-Three Dimensional Analysis of Choking  
Flow for Radial Gas Turbines. 78-GT-132.

**Nance, G. W.**  
Annular Geometry - Its Effect on Kick Tolerance.  
78-Pet-63.

**Nara, Y., Nozaki, N., Takeuchi, I., Fukuda, M.  
and Koga, T.**  
Study on the Resistivity of Various Types of Steels  
Against Propagating Shear Fracture by  
Modified West Jefferson Type Burst Test.  
78-PVP-71.

**Nash, J. H.**  
See **Wright, A. P.**

**Nawrocki, P. M.**  
See **Kuehn, T. J.**

**Nelson, D. J.**  
See **Maher, W. E.**

**Nelson, D. V., Abo-El-Ata, M. M., Stephen, J. D.  
and Sim, R. G.**  
Development of Structural Design Criteria for  
Highly Irradiated Core Components.  
78-PVP-78.

**Nelson, R. D.**  
See **Shapiro, L. H.**

**Nelson, W. G.**  
ECLSS Definition for a Low Cost Space Construc-  
tion Base. 78-ENAS-15.

**Nemat-Nasser, S. and Oranratnachai, A.**  
Minimum Spacing of Thermally Induced Cracks in  
Brittle Solids. 78-Pet-62.

**Nevill, G. E. and Marmo, J.**  
Improving Design Problem Representations.  
78-DET-73.

**Newmarch, J. E.**  
See **Stevens-Guille, P. D.**

**Nickerson, J. H. D. and Ruhe, A.**  
Steam Generator Design Improvements for the  
CANDU Wolsung Nuclear Power Plant.  
78-NE-4.

**Nicolas, D. P.**  
Scanning Microscopy in Microcircuit Failure  
Analysis. 78-WA/Aero-22.

**Nielsen, P. B.**  
See **Worape-Schmidt, P.**

**Niemeyer, C.**  
See **Dilariano, R. A.**

**Niggemann, R. E., Greenlee, W. J. and Lacey, P.  
D.**  
Fluid Selection and Optimization of an Organic  
Rankine Cycle Waste Heat Power Conversion  
System. 78-WA/Ener-6.

**Nisbett, E. G.**  
See **Mraz, G. J.**

**Nishikawa, H., Imatake, T., Tomita, N., Kaji, H.,  
Kawabe, N., Shinoda, H. and Kurita, M.**  
Development of a Very High Temperature Steam  
Heater. 78-WA/HT-2.

**Nishikawa, N. and Takase, H.**  
An Analysis of Nonsimilar Boundary Layer Con-  
taining Liquid-Droplets Over a Heated Circular  
Cylinder. 78-HT-20.

**Niyogi, B. K.**  
Simplified Seismic Analysis Method For Small  
Pipes. 78-PVP-43.

**Nof, S. Y., Baraah, M. M. and Herald, M. J.**  
Analysis of Operating Rules in a Computerized  
Manufacturing System. 78-WA/Prod-38.

**Nozaki, N.**  
See **Nara, Y.**

**Nunneley, S. A.**  
See **Stirbley, R. F.**

## O

**Oakley, D. J.**  
Closed Loop in-Reactor Assembly (CLIRA) - A Fast  
Flux Test Facility Test Vehicle. 78-WA/NE-6.

**Obara, Y. and Ellis, F. V.**  
Finite Element Analysis of a Large Ridge Inert  
Atmosphere Creep Test Specimen. 78-PVP-7.

**O'Connor, E. W. and Rethke, D. W.**  
Shuttle Orbiter Water Spray Boiler. 78-ENAS-17.

**Odell, E. I.**  
An In-Field Method for the Determination of the  
Normal Plastic Anisotropy (R) Value for Sheet  
Materials. 78-WA/Prod-41.

**Odgens, J.**  
See **Kretschmer, D.**

**O'Donnell, W. J.**  
See **Porowski, J. S.**

**Oehlbeck, D. L. and Erian, F. F.**  
Heat Transfer From Axisymmetric Sources at the  
Surface of a Rotating Disk. 78-GT-141.

**Offner, D. H.**  
A Case Study for Bionics: The Space Toggle.  
78-DET-47.

**Ogasawara, M.**  
See **Takagi, T.**

**Ogg, J.**  
See **Darlow, M. S.**

**Ohmura, M.**  
See **Kanzawa, A.**

**Ohtsuka, N., Nakano, M. and Ueyama, H.**  
Acoustic Emission Monitoring During Rupture Test  
of Pressure Vessel and Laboratory Fracture  
Test. 78-PVP-18.

**Okamoto, H.**  
See **Fukumoto, H.**

**Olender, D. R.**  
Overview of Fuel Element Design. 78-PVP-50.

**Oldenkamp, R. D.**  
See **Katz, B.**

**Oldfield, W.**  
See **Wullaert, R. A.**

**Oliver, I.**  
Steam Turbines for Cogeneration Power Plants.  
78-JPGC-Pwr-16.

**Olzowski, M.**  
Design and Performance Considerations of  
Evaporative - Pad, Waste - Heat Greenhouses.  
78-WA/PID-1.

**Oosthuizen, P. H. and Leung, R. K.**  
Combined Convective Heat Transfer From Vertical  
Cylinders in a Horizontal Flow. 78-WA/HT-45.

**Opel, A. E. and Gilbert, L. F.**  
Closed Loop Source Monitoring Saves Energy and  
Money. 78-WA/APC-6.

**Oranratnachai, A.**  
See **Nemat-Nasser, S.**

**O'Reilly, W. J.**  
A High-Effectiveness Regenerator Design Concept.  
78-GT-78.

**Omer, G. M.**  
See **Audet, N. F.**

**Ortolano, R. J. and Franz, H. L.**  
A Power Company's Approach to Improved Steam  
Turbine Availability. 78-WA/Pwr-1.

**Ortolano, R. J. and Richardson, R. R.**  
The Surface Condenser as an Environmental Bar-  
rier. 78-JPGC-Pwr-17.

**Oruh, S. N. and Tippetts, J. R.**  
The Flow Control Properties of a Specially De-  
signed Tee-Joint. 78-WA/DSC-5.

**Osborn, C.**  
See **Kinzel, G.**

**Oser, H.**  
The European Life Sciences Experiments Onboard  
the First Spacelab Mission. 78-ENAS-24.

**Ostergren, W. J. and Krempl, E.**  
A Linear Uniaxial Damage Accumulation Law for  
Creep-Fatigue Interaction. 78-PVP-63.

**Ostrach, S. and Raghavan, C.**  
Effect of Stabilizing Thermal Gradients on Natural  
Convection in Rectangular Enclosures.  
78-HT-42.

**Ottensmeyer, A. S.**  
Electronic Line Break Controls for Gas Pipelines.  
78-Pet-52.

**Owens, W. L.**  
Correlation of Thin Film Evaporation Heat Transfer  
Coefficient for Horizontal Tubes. 78-WA/  
HT-67.

## P

**Pajouhi, K. and Ghosh, A.**  
Fabrication and Installation of Production Platforms  
in Shallow Open Sea Areas: A New Concept.  
78-Pet-70.

**Palazotto, A. N.**  
See **Hartnett, M. J.**

**Palme, H. S.**  
See **Lowe, A. L.**

**Palmer, M. E., Sallet, D. W. and Wu, K. F.**  
The Influence of Thermodynamic Properties on the  
Calculation of Homogeneous Mass Flow Rates.  
78-WA/HT-48.

**Palomino, G. E. and Shapiro, J. L.**  
The Impact on Power Plant Design of Sulfur Dis-  
tribution in Coal. 78-JPGC-Pwr-13.

**Pandolfi, M. and Colasurdo, G.**  
Numerical Investigation on the Generation and  
Determination of Rotating Stalls. 78-WA/GT-5.

**Panton, J.**  
The Radial Turbine As A Ceramic Component.  
78-GT-178.

**Panton, R. L.**  
See **Pla-Barby, F. E.**

**Panzera, C.**  
See **Frickson, A. F.**

**Papaya, N.**  
Optimum Design for Class 1 Nuclear Piping.  
78-PVP-81.

**Paranjpe, P. A.**  
See **Sridhara, K.**

**Parker, A. T.**  
See **George, P. T.**

**Parker, D. A., Adams, D. R. and Munro, R.**  
Progress in Understanding and Control of Ring  
Lubrication. 78-DGP-25.

**Parsons, J. D. and Wieneke, S. A.**  
Empirical Load-Response Analysis of a Railroad  
Tank Car. 78-WA/RT-2.

**Patel, B. R. and Desai, K. J.**  
Direct Blade Force Measurements in Transonic  
Cascade Flows. 78-GT-45.

**Patterson, J. R.**  
See **McLean, H. D.**

**Pechacek, R.**  
High Pressure, Quick Acting Closure for Large  
Diameter, Full Opening, Nuclear and Petro-  
Chem Pressure Vessels. 78-PVP-74.

**Pellini, W. S.**  
See **Stone, D. H.**

**Pennick, H. G.**  
See **Cook, T. S.**

**Pepper, D. W. and Harris, S. D.**  
Numerical Solution of Three-Dimensional Natural  
Convection by the Strongly Implicit Procedure.  
78-WA/HT-10.

**Perchard, R. J.**  
Use of a Radar Reflective and Thermal Protective  
Covering for Arctic Survival: Some Attributes of  
Heat Reflection Applied to the State of Thermal  
Equilibrium. 78-Pet-14.

**Perfect, N.**  
See **Strasberg, L.**

**Perlmutter, R. M.**  
See **Bogden, F. J.**

**Perrin, J. S.**  
The Rule of Codes, Standards and Regulations in  
Nuclear Pressure Vessel Surveillance Pro-  
grams. 78-Mat-24.

**Pershing, D. W.**  
See **Heap, M. P.**

**Peters, W. J. and Jones, R. G.**  
The F-16 Environmental Control System.  
78-ENAS-11.

**Petrina, P.**  
Safety Index of Nuclear Concrete Containment  
Structures. 78-PVP-106.

**Petroski, H. J.**  
Dugdale Plastic Zone Sizes for Edge Cracks.  
78-PVP-98.

**Pfeiffer, G. D.**  
See **Adams, R. G.**

**Pfender, E.**  
See **Baliga, B. R.**

**Pfender, E.**  
See **Liu, C. H.**

**Philpot, M. G.**  
See **Armstrong, F. W.**

**Pichot, P.**  
Selection of Compressors and Driving Equipment.  
78-GT-168.

**Pick, R. J. and Harris, H. D.**  
Morrison and Parry Seals for Water Pressures up to  
345 MPa. 78-PVP-13.

**Pierce, B. P.**  
Effects of Clean Air Act Amendments of 1977 on  
Construction or Modification of Natural Gas  
Processing Plants. 78-Pet-10.

**Pierston, E. S.**  
See **Fabris, G.**

**Pietruszkiewicz, J.**  
See **Forster, L. L.**

**Pillsbury, P. W., Cohn, A., Mullik, P. R. and Stein,  
T. R.**  
Investigating Combustion Turbine Burner Per-  
formance with Coal Derived Liquids Having  
High Fuel Bound Nitrogen. 78-GT-126.

**Pindera, J. T.**  
See **Hartung, H. F.**

**Pines, H. S., Green, M. A., Pope, W. L. and  
Doyle, P. A.**  
Floating Dry Cooling, A Competitive Alternative to  
Evaporative Cooling in a Binary Cycle Geo-  
thermal Power Plant. 78-WA/Ener-2.

**Pirro, J.**  
Nuclear Fuel Service Center Approach to Reducing  
Proliferation Potential. 78-WA/NE-9.

**Pla-Barby, F. E., Vilel, G. C. and Panton, R. L.**  
Performance of Rotary Bed Silica Gel Solid Desic-  
cant Dryers. 78-HT-36.

**Ploeger, D. W.**  
Attenuation of Weak Pressure Waves in a Simple  
Piping Loop. 78-PVP-61.

**Plumb, O. A.**  
See **Evans, G. H.**

**Plummer, M. C.**  
Suggested Improvements in the Measurement of  
Pump Vibration for In-Service Inspection.  
78-WA/NE-5.

**Pogson, J. T.**  
See **Shannon, R. L.**

**Polani, J. R.**  
See **Gilbert, N.**

**Pope, W. L.**  
See **Pines, H. S.**

**Porowski, J. S., O'Donnell, W. J. and Roberts, A.  
S.**  
Theory of Free Coiled Pressure Vessels.  
78-PVP-73.

**Povarov, O. A.**  
See **Filippov, G. A.**

**Powe, R. E.**  
Gas Stream Composition and Temperature Deter-  
mination in a Coal-Fired MHD Simulation  
Facility. 78-WA/HT-23.

**Powe, R. E. and Comfort, R. M.**  
Numerical Solution of Two-Dimensional Natural  
Convection in Enclosed Spaces. 78-WA/  
HT-11.

**Prager, R. C. and Sun, T. H.**  
The Analysis of Heat Transfer with and without  
Condensation in a Heat Pipe Heat Exchanger.  
78-WA/HT-59.

**Pratt, C. M.**  
See **Beard, M. G.**

**Precious, R. W. and Axtman, W. H.**  
Report of Test Program to Update Equipment  
Specifications and Design Criteria for Stoker-  
Fired Boilers. 78-IPC/FU-3.

**Prem, L. L. and Meyer, R. H.**  
Test Results of a New Distillate Fuels Purification  
System. 78-GT-203.

**Prenger, F. C. and Haberstroh, R. D.**  
Heat Transfer in Packed Beds at Low Reynolds  
Number. 78-HT-46.

**Prentice, R. M.**  
See **Bronson, L. E.**

**Prestwich, S. M. and Miller, L. G.**  
Directional Drilling Completion Method Geothermal  
Wells. 78-Pet-35.

**Price, J. L., McKenny, L. D., Gershon, I. J. and  
Meece, C. E.**  
Time-Phased Development Methodology-The Key  
For Reliable Engines in Future Military Aircraft  
Weapons Systems. 78-GT-167.

**Price, P. St. J.**  
Basis of Structural Design Criteria for Buried Gas  
Transmission Pipelines. 78-Pet-73.

**Proaño, E. A.**  
See **Beggs, H. D.**

**Purdy, L. R.**  
See **Le May, I.**

**Putnam, D. F.**  
See **Colombo, G. V.**

## Q

**Quattrone, P. D.**  
See **Schubert, F. H.**

**Quon, C.**  
Finite Amplitude Instability and Penetrative Con-  
vection in a Rotating Fluid. 78-HT-39.

## R

**Raafat, H.**  
See **Milner, D. A.**

**Rabe, D.**  
See **Barthelemy, R.**

**Rable, G.**  
See **Baz, A.**

**Radkiewicz, R. J.**  
See **Madiwale, A. N.**

**Rafalski, A.**  
The Special Requirements for Nuclear Application  
Standby Diesel-Generator Sets. 78-DGP-6.

- Rafinejad, D.**  
Design of a 150 KW Solar-Powered Irrigation Facility. 78-WA/Sol-6.
- Raghavan, C.**  
See Ostrach, S.
- Raghavan, M. R.**  
See Mruthyunjaya, T. S.
- Rahman, A. A.**  
Dropwise Condensation on Rough Aluminum Surfaces. 78-WA/HT-42.
- Rahman, A. A. and Edgerton, R. H.**  
Magnetohydrodynamic Solar Energy Converter. 78-DET-70.
- Rahman, A. A. and Edgerton, R. H.**  
Thermoelectric Generators for Solar Energy Conversions. 78-DET-75.
- Rahman, A. A. and Edgerton, R. H.**  
Thermionic Power Converters for Solar Energy. 78-DET-74.
- Rahn, R. C.**  
Probabilistic Stress Evaluation of Piping Systems Assuming Single Snubber Failures. 78-PVP-107.
- Raj, R. and Min, B. K.**  
The Effect of Cycle Shape on Creep-Fatigue Interaction in Austenitic Stainless Steels. 78-PVP-89.
- Raj, R. and Moskowitz, S. L.**  
Transpiration Air Protected Turbine Blades - An Effective Concept to Achieve High Temperature and Erosion Resistance for Gas Turbines Operating in an Aggressive Environment. 78-GT-100.
- Rajpaul, V. K. and Runnels, J. N.**  
Advanced Environmental Cooling Concepts for Supersonic Aircraft. 78-ENAs-21.
- Ramalingam, S. and von Turkovich, B. F.**  
Structure - Property Relations in Free Machining Steels. 78-WA/Prod-32.
- Ramamurthy, A. S. and Bhaskaran, P.**  
Constrained Flow Past Cavitating Bluff Bodies. 78-WA/FE-11.
- Randall, S. E., Halsted, D. M. and Taylor, D. L.**  
Optimum Vibration Absorbers for Linear Damped Systems. 78-WA/DE-22.
- Rangwala, A. S. and Stadler, E. L.**  
Mechanical and Thermal Stresses in the Volute of a Pump Casing. 78-PVP-45.
- Ranjan, G. V.**  
See Thomas, J. M.
- Rao, A. C.**  
Slider-Crank Mechanism with a Flexibly Attached Slider - Optimum Synthesis Via Geometric Programming. 78-DET-31.
- Rao, B. N.**  
See Appl, F. C.
- Rasband, J. L.**  
See Schweinberg, R. N.
- Rauch, T.**  
A Long Term System Dynamic Response to a Sodium-Water Reaction in a Typical LMFBR Steam Generator Loop. 78-PVP-66.
- Rautenberg, M.**  
See Bammert, K.
- Ray, D. and Tuason, E. B.**  
PIPED/HEAT: A Transient Thermal Analyzer Evaluating Class 1 Piping Components According to Section III of the ASME Code. 78-PVP-80.
- Reardon, J. D. and Longo, F. N.**  
Development of a New Flame Sprayed Erosion Resistant Abradable Coating System. 78-WA/GT-6.
- Reddy, C. S.**  
Double-Diffusive Convection in an Infinitely Tall Slot - A Numerical Study. 78-WA/HT-8.
- Reed, N. G. and Wilson, J. M.**  
Design and Development of a Power Turbine for the Spey Gas Generator. 78-GT-183.
- Reed, R. J.**  
See Knodel, J. R.
- Rehfield, L. W. and Briley, R. P.**  
A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys. 78-WA/Aero-10.
- Reid, R. C.**  
See Sacco, A.
- Reifsnider, K. L. and Masters, J. E.**  
Investigation of Characteristic Damage States in Composite Laminates. 78-WA/Aero-4.
- Reihman, T. C.**  
See Townes, H. W.
- Reiter, U.**  
See Bammert, K.
- Renfrew, D. W.**  
See Morgan, W. R.
- Renk, F. J. and Wayner, P. C.**  
An Evaporating Ethanol Meniscus: Part I, Experimental Studies. 78-HT-29.
- Rethke, D. W.**  
See O'Connor, E. W.
- Revett, M. A.**  
ISI Management and the Role of the Third Party Consultant. 78-NE-14.
- Reynolds, R., White, R. L. and Hume, P.**  
The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications. 78-WA/PEM-2.
- Reysa, R. P., Flugel, C. W. and Thompson, C. D.**  
Test Evaluation of Space Station ECLSS Maintenance Concepts. 78-ENAs-43.
- Riccardella, P. C. and Cooper, W. E.**  
Safety Evaluation of Reactor Vessel Nozzle Cracks. 78-PVP-90.
- Riccardella, P. C.**  
See Delvin, S. A.
- Rice, R. C.**  
See Morgan, W. R.
- Richard, C. C. and Latham, R. F.**  
The Use of Gas Turbine Laboratories in Teaching Engineering and Non-Engineering Students. 78-GT-180.
- Richards, C. D. and Hesje, R. C.**  
Energy Conservation in Modern Pipelining. 78-Pet-68.
- Richardson, D. A.**  
See Corpron, G. P.
- Richardson, R. R.**  
See Ortolano, R. J.
- Richey, R. J.**  
See Huang, S. L.
- Richter, D. L.**  
The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry. 78-Pet-78.
- Ricker, T. W.**  
See Stuble, P. H.
- Riddle, D. L.**  
See Selfridge, R. G.
- Rieger, N. F., Dodd, A. B. and Wicks, A. L.**  
Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages. 78-WA/DE-16.
- Rieke, K. L. and Wander, S. M.**  
Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application. 78-WA/GT-8.
- Rinehart, R. E.**  
Locomotive Response to Random Track Surface Irregularities. 78-WA/RT-12.
- Rio, R. A.**  
See McTasney, R.
- Risch, D. M. and Goar, D.**  
A Microprocessor Based Hierarchical Control System for Gas Turbines. 78-GT-124.
- Rist, D.**  
Influence of Geometric Effects on the Aspect Ratio Optimization of Axial Turbine Bladings. 78-GT-173.
- Rizzo, V.**  
See Bigley, W. J.
- Roberts, A. S.**  
See Porowski, J. S.
- Roberts, C. C.**  
Microcomputer Application in Engineering Design. 78-DET-85.
- Roberts, P. B., Florito, R. J. and Butze, H. F.**  
Wide Range Operation of Advanced Low NO<sub>x</sub> Aircraft Gas Turbine Combustors. 78-GT-128.
- Robertson, G. D.**  
See Ahmad, A.
- Robidart, C. M.**  
See Dawson, B. E.
- Robson, R. L.**  
See Carlson, N. G.
- Rockefeller, E. F.**  
See Fohey, M. F.
- Roderique, D. D.**  
See Wright, A. P.
- Rodgers, C.**  
Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit. 78-WA/GT-2.
- Rodgers, C.**  
See Wendt, P. G.
- Roebelen, G. J.**  
See Trusch, R. B.
- Romander, C. M., Schwer, L. E. and Cagliostro, D. J.**  
Response of Water-Filled Thin-Walled Pipes to Pressure Pulses: Experiments and Analysis. 78-PVP-53.
- Roman-Lazo, C. E.**  
See Beggs, H. D.
- Rosen, G.**  
See Holbrook, G. E.
- Rosenfield, A. R.**  
See Hoagland, R. G.
- Rosow, D. F.**  
See Whiting, A. R.
- Rossetto, S.**  
See Conti, A.
- Rossmassler, R.**  
See Weingart, M.
- Roth, T. S., Sundquist, B. E. and Biancheria, A.**  
Application of LIFE Transient Codes to Experiment and Core Design. 78-PVP-51.
- Roukis, J. G.**  
See Haslett, R. A.
- Rowen, W. I.**  
See Naesheim, K.
- Roy, J. G. and Haft, A. J.**  
Energy Conservation Through Condensate Recovery. 78-IPC-Pwr-1.
- Rubayi, N. A. and Suresh, S.**  
Vibration of Cantilever Sandwich Beams. 78-DE-20.
- Rubin, S.**  
See Stevenson, A. E.
- Ruh, R.**  
See Larsen, D. C.
- Ruhe, A.**  
See Nickerson, J. H. D.
- Rummel, J. A.**  
See Huffstetter, W. J.
- Runnels, J. N.**  
See Rajpaul, V. K.
- Rush, E. E.**  
See Seamons, L. O.
- Rush, R. E.**  
Operating Experience with Three 20 MW Prototype Flue Gas Desulfurization Processes. 78-JPGC-Pwr-12.
- Russell, C. M. B.**  
See Jones, T. V.
- Russell, R. C.**  
See Wilkes, C.
- Russell, R. J. and Wilton, J. J.**  
An Investigation of Turbine Erosion by Combustor Generated Carbon in a Light Weight Marine Gas Turbine. 78-GT-96.
- Ruzz, J. I. and Haemer, E. J.**  
On-Site Generation of Hydrogen for Generator Cooling. 78-GT-196.
- Ryan, J.**  
Corrosion Failures: Three Case Histories and Their Solutions. 78-WA/Aero-23.

## S

- Sacco, A. and Reid, R. C.**  
Limitations on Water Production in the Iron-Catalyzed Bosch Process. 78-ENAs-4.
- Sakamoto, H.**  
See Takemoto, M.
- Sakata, K., Ueul, H. and Takahara, K.**  
Cooling Characteristics of Film Cooled Turbine Vane Having Multi-Row of Ejection Holes. 78-GT-21.



- Salcudean, M., Bul, T. M. and Lee, Y.**  
A Three Dimensional Analysis for the Rewetting Process of Hot Channels. 78-WA/HT-27.
- Saliba, G.**  
See **Basavanthally, N.**
- Sallet, D. W., Hannemann, R. J. and Gühler, M.**  
An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes. 78-WA/HT-36.
- Sallet, D. W.**  
On the Sizing of Pressure Relief Valves for Pressure Vessels Which are Used in the Transport of Liquefied Gases. 78-WA/HT-39.
- Sallet, D. W.**  
See **Palmer, M. E.**
- Salvesen, K. G.**  
See **Waterland, L. R.**
- Salzano, V. A. and Burdick, W. J.**  
Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer. 78-WA/PEM-5.
- Samaraweera, D. S. A.**  
See **Baughn, J. W.**
- Sampson, R. C. and Jagels, R. E.**  
Stress Analysis for the Design of Liquid Metal Piping in the Fast Flux Test Facility. 78-PVP-21.
- Sander, W.**  
See **Wacker, E. A.**
- Sandstede, H.**  
See **Bammer, K.**
- Sanford, C. E.**  
See **Brodie, L. C.**
- Sapiro, L.**  
See **Wendt, P. G.**
- Saravananmootoo, H. I. H. and Skinner, A.**  
Requirements for Educational Gas Turbines. 78-GT-76.
- Sarian, S.**  
See **Lamping, G.**
- Sarofim, A. F., Farag, I. H. and Hotell, H. C.**  
Radiative Heat Transmission from Non-Luminous Gases. Computational Study of the Emissivities of Carbon Dioxide. 78-HT-16.
- Sass, D. E.**  
See **Shin, Y. S.**
- Sato, H.**  
See **Iino, T.**
- Satterwhite, L. E.**  
See **Locheed, E. W.**
- Sauer, H. J.**  
See **Howell, R. H.**
- Sauer, R. L.**  
See **Colombo, G. V.**
- Sauer, R. L.**  
See **Fohey, M. F.**
- Saxton, M. J., Creswick, F. A. and Kircher, J. F.**  
Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory. 78-WA/Fu-1.
- Sayyed, S.**  
Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance. 78-Pet-28.
- Schilling, H. D., Schreckenberger, H. and Wied, E.**  
A New Concept for the Development of Coal Burning Gas Turbines. 78-GT-40.
- Schleihtoff, K. and Termuehlen, H.**  
Steam Purity in German Power Plants: Standards, Operational Data and Effects on Turbine Components. 78-JPGC-Pwr-20.
- Schmidt, K.**  
See **Wacker, E. A.**
- Schmidt, P. S. and Heare, J.**  
The Role of State Government in Industrial Energy Conservation. 78-TS-7.
- Schmidt, P. S.**  
See **Urdaneta-B, A. H.**
- Schmidt, W. and Hinkle, S.**  
Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System. 78-DGP-5.
- Schneider, H.**  
Utilization of Computer Techniques in Aero-Propulsion Trend Problems. 78-WA/Aero-16.
- Schoeberle, D. F.**  
See **Belytschko, T.**
- Schoenhals, R. J.**  
See **Baladi, J. Y.**
- Schoepner, R. J.**  
Design of the Modern Blast Furnace Stockhouse and Charging Conveyor. 78-WA/MH-2.
- Schreckenberger, H.**  
See **Schilling, H. D.**
- Schroeder, J.**  
See **Mohamed, M. A.**
- Schroff, W. E. J.**  
See **Wallenberger, F. T.**
- Schubert, F. H., Lee, M. K., Davenport, R. J. and Qualtrone, P. D.**  
Water Electrolysis System: H<sub>2</sub> and O<sub>2</sub> Generation. 78-ENAs-3.
- Schuetzenduebel, W. G.**  
The Fort St. Vrain Steam Generators. 78-NE-7.
- Schuetzenduebel, W. G. and Swanson, L. L.**  
Performance of the Fort St. Vrain Steam Generators up to 70% Reactor Power During the Start-Up Test Program. 78-NE-8.
- Schulze, F. W.**  
See **Baker, P. H.**
- Schweinberg, R. N. and Rasband, J. L.**  
Solar One - a 10-Megawatt Solar Thermal Central Receiver Pilot Plant Project. 78-JPGC-Pwr-10.
- Schwer, L. E.**  
See **Romander, C. M.**
- Seaman, L.**  
See **Shockey, D. A.**
- Seamons, L. O., Rush, E. E. and Moeller, C. E.**  
1MW Calorimetric Receiver for Solar Thermal Test Facility. 78-WA/Sol-7.
- Sears, J. W. and Coletto, M. S.**  
Reducing Costs With Coordinated Advanced Design and Production Techniques. 78-DE-9.
- Seay, J. G., Anderson, P. J. and Daniels, E. J.**  
The LNG Industry: An Overview of Projects and Costs. 78-Pet-32.
- Sebesta, P. D.**  
See **Bowman, G. H.**
- Seborg, D. E. and Fisher, D. G.**  
Experience with Experimental Applications of Multivariable Computer Control. 78-WA/DSC-26.
- Sedlatschek, R. L.**  
Pattern Control System Requirements for An Electronic Consumer Sewing Machine. 78-DE-12.
- Sehitoglu, H. and Klein, R. E.**  
A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems. 78-WA/DSC-29.
- Sekhar, N.**  
See **Brown, T. D.**
- Seiberg, B. P.**  
See **Summers, D. A.**
- Selridge, R. G. and Riddle, D. L.**  
Design Algorithms for Compound Gear Train Ratios. 78-DET-62.
- Semura, J. S.**  
See **Brodie, L. C.**
- Seng, W. R.**  
See **Kuo, S. C.**
- Senoo, Y. and Kinoshita, Y.**  
Limits of Rotating Stall and Stall in Vaneless Diffuser of Centrifugal Compressors. 78-GT-19.
- Sens, W.**  
Advanced Turbofan Engines for Low Fuel Consumption. 78-GT-192.
- Serata, S.**  
Geomechanical Basis for Design of Underground Salt Cavities. 78-Pet-59.
- Sernas, V. and Lee, E. I.**  
Heat Transfer in Air Enclosures of Aspect Ratio Less than One. 78-WA/HT-7.
- Serotta, D.**  
Applications of the Electro-Chemical Combustion Oxygen Analyzer. 78-IPC-Pwr-3.
- Server, W. L.**  
See **Wullaert, R. A.**
- Seward, W. D.**  
See **Smith, S. E.**
- Sgourakes, G. E.**  
See **Corpron, G. P.**
- Shadday, M. A., Kauzlarich, J. J. and Lowry, R. A.**  
Total Temperature Probe Calibration in Supersonic Rarefied Flows. 78-WA/HT-1.
- Shaffer, R. J.**  
See **Hanson, M. E.**
- Shah, N.**  
See **Fowler, J. R.**
- Shanks, H. R.**  
See **Hall, J. L.**
- Shannon, R. L. and Pogson, J. T.**  
Heat Transfer Augmentation Using a Corona Discharge Air Jet. 78-ENAs-8.
- Shapiro, J. L.**  
See **Palomino, G. E.**
- Shapiro, L. H., Hoskins, E. R., Nelson, R. D. and Metzner, R. C.**  
In-Situ Measurement of the Mechanical Properties of Sea Ice. 78-Pet-15.
- Shapiro, N. L., Molin, A., Jesick, J. F. and Daniel, J.**  
Resource Utilization and Design Aspects of the Heavy Water Reactor. 78-WA/NE-7.
- Sharma, A. V.**  
Effect of Temperature on Composite Sandwich Structures Subjected to Low Velocity Projectile Impact. 78-WA/Aero-2.
- Sharp, M. K. and Loehrke, R. I.**  
Stratified Versus Well-Mixed Sensible Heat Storage in a Solar Space Heating Application. 78-HT-49.
- Sharp, M. K.**  
See **Loehrke, R. I.**
- Sheldon, R. C.**  
See **Caruvana, A.**
- Shilling, R. B. and Lou, Y. K.**  
The Effect of Internal-Flow on the Dynamic Response of a Cantilever Pipe. 78-Pet-57.
- Shin, Y. S., Sass, D. E. and Jendrzejczyk, J. A.**  
Vibro-Impact Responses of a Tube with Tube-Baffle Interaction. 78-PVP-20.
- Shin, Y. W. and Valentin, R. A.**  
A Numerical Method Based on the Method of Characteristics for Two-Dimensional Fluid Transients. 78-PVP-57.
- Shinoda, H.**  
See **Nishikawa, H.**
- Shitzer, A.**  
See **Erez, A.**
- Shiu, K. C. and Beggs, H. D.**  
Predicting Temperatures in Flowing Oil Wells. 78-Pet-9.
- Shwartz, B. D.**  
See **Modak, J. P.**
- Shladover, S. E.**  
Longitudinal Control of Automated Guideway Transit Vehicles Within Platoons. 78-WA/DSC-13.
- Shockey, D. A., Seaman, L., Dao, K. C. and Curran, R.**  
A Computational Model for Fracture of Pressure Vessel Steel Derived from Experimental Data. 78-PVP-92.
- Shoji, K.**  
See **Moza, A. K.**
- Shu, H. T.**  
See **Kuo, S. C.**
- Siegel, A. I.**  
Human Performance Reliability - Its Measurement and Impact on System Reliability. 78-DE-17.
- Siegel, W. H., Fields, R. A. and Easley, J. T.**  
Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft - Including Comparisons with Finite Element and Classical Analyses. 78-WA/Aero-3.
- Silvis, T. W.**  
See **Engelman, H. W.**
- Sim, R. G.**  
See **Nelson, D. V.**
- Simmons, R. T.**  
See **Hover, J. G.**
- Simoneau, R. J.**  
See **Hendricks, R. C.**
- Simonen, F. A., Griffiths, J. A. and Thurgood, M. J.**  
Analysis of a Canister Closure Design by Damage Tolerance Concepts. 78-PVP-108.
- Simonen, F. A.**  
See **Van Echo, J. A.**
- Sinclair, A. R. and Graham, J. W.**  
A New Proppant for Hydraulic Fracturing. 78-Pet-34.

- Sinden, F. W.  
See Dutt, G. S.  
Sinha, D. N.  
See Brodie, L. C.  
Sinha, P. K., Wormley, D. N. and Hedrick, J. K.  
Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control  
78-WA/DSC-14.
- Siock, S.  
Astronomical Observatory Dome Bearing Design.  
78-WA/DE-19.
- Sisto, F.  
See Tokel, H.  
Skinner, A.  
See Saravanamutto, H. I. H.
- Slack, A. V.  
Emission Control for SO<sub>2</sub>: An Update. 78-JPGC-Pwr-11.
- Sloan, J. G. and Vinson, J. R.  
Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads.  
78-WA/Aero-5.
- Smalley, A. J., Tessarzik, J. M. and Badgley, R. H.  
The Stability of an Asymmetric Rotor in Damped Supports. 78-GT-172.
- Smalley, A. J.  
See Darlow, M. S.  
Smart, M. W.  
See Andrews, D. K.  
Smith, C. C.  
See Kwak, Y. K.
- Smith, C. O.  
ASME Case Problem - Design Defect in a Leaf Spring. 78-WA/DE-18.
- Smith, D. P.  
See Homer, M. W.  
Smith, G. J.  
See Laird, A. D. K.  
Smith, K. F.  
See Johnson, E. T.
- Smith, P. D.  
See Anderson, C. A.  
Smith, R. C.  
See Loeffler, F. J.  
Smith, S. E. and Seward, W. D.  
Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material - Solid Helium. 78-WA/HT-12.
- Smith, S. U.  
See Wald, G. A.  
Smith, T. F. and Lee, H. Y.  
Radiant Exchange for a Fin and Tube Solar Collector. 78-HT-33.
- Smith, W. L. and Brouillet, A. O.  
Challenges to Life Support System's Future.  
78-ENAS-28.
- Smith, Y. E.  
See Fletcher, F. B.  
So, R. M. C.  
See Dakin, J. T.  
Soderstrom, K. G.  
See Modest, M. F.  
Soedel, W.  
See Leemhuis, R. S.
- Solberg, R. F.  
Research and Development Decisions Through the Use of Present Value Analysis. 78-DE-2.
- Soltveil, R. E.  
See Azar, J. J.  
Somers, J. H.  
See Baines, T. M.
- Sossamon, J. L.  
See Dannenmaier, J. H.
- Spalding, E. G. and Krulls, G. E.  
A Combined System of Fuel Washing Involving Both Centrifuges and Electrostatic Separators - A Hybrid. 78-GT-130.
- Spence, J. and Findlay, G. E.  
The Effect of Thickness Variations on the Behaviour of Smooth Curved Pipes Under External Bending. 78-PVP-93.
- Spintig, J.  
See Kring, G.
- Sridhara, K., Chidananda, M. S. and Paranjpe, P. A.  
Jet Curtain Flameholder for Aircraft Afterburners.  
78-GT-95.
- Stachyra, L. J.  
See Epstein, M.  
Stadler, E. L.  
See Rangwala, A. S.  
Stango, R. J.  
See Durocher, L. L.  
Stanley, R. E. and Akers, D. J.  
Radial Compressor Development as Dictated by the Requirements of Large Turbochargers.  
78-GT-187.
- Stanway, R. and Burrows, C. R.  
Experimental Study of Input Transducer Dynamics in Bearing Identification. 78-WA/DSC-6.
- Stasny, M. and Feistauer, M.  
Flow in an Annular Axial-Radial Diffuser.  
78-GT-133.
- Steels, R. K.  
See Hollworth, B. R.  
Stein, R. L.  
See Gray, R. E.  
Stein, T. R.  
See Pillsbury, P. W.  
Stephen, J. D.  
See Nelson, D. V.  
Stevens, G. A.  
See Hall, J. L.  
Stevens-Guille, P. D., Thorpe, C. R., Newmarch, J. E. and Eccleston, R. J.  
Sealing Forces for Leak-Tight Operation of a Self-Energized Pressure Vessel Closure.  
78-PVP-16.
- Stevenson, A. E. and Rubin, S.  
Ambient Vibration Monitoring for Assessing the Structural Health Offshore Production Platforms. 78-Pet-71.
- Stewart, H. B. and Dahlberg, R. C.  
HTGR Strategy for Reduced Proliferation Potential.  
78-WA/NE-11.
- Stewart, J. E.  
Application of European Radwaste Technology in North America. 78-NE-16.
- Stewart, J. T. and Klett, M. G.  
Coal Conversion for Feedstock and Fuel.  
78-Pet-17.
- Stewart, W. B.  
See Kenchington, J. M.  
Stice, J.  
See Graham, L.
- Stockinger, S.  
See Weingart, M.
- Stone, D. H. and Pellini, W. S.  
The Application of Fracture Control Principles to Freight Car Center-Sill Structures. 78-RT-7.
- Straltz, J. F.  
Proper Flare Operation Conserves Energy.  
78-Pet-33.
- Strang, J. E.  
F-18 Air Conditioning System. 78-ENAS-23.
- Strasberg, L., Perfect, N. and Elliot, G. L.  
Some Static and Dynamic Properties of Railway Wheels. 78-WA/RT-4.
- Straubel, M. and Laufer, H.  
Distributor Injection Pump, Type VE, Design and Examples for Application. 78-DGP-7.
- Stribley, R. F. and Nunneley, S. A.  
Physiological Requirements for Design of Environmental Control Systems: Control of Heat Stress in High-Performance Aircraft. 78-ENAS-22.
- Strother, J. R.  
Description and Performance of A 7000-Shp Marine Gas Turbine Engine. 78-GT-188.
- Stubbings, M. D.  
See Bray, D. E.
- Stubley, P. H. and Ricker, T. W.  
Design and Analysis of a Compact Array of (Class 1) Nuclear Piping for Large Anchor Movements and Seismic Supports. 78-PVP-29.
- Stuckenbruck, S.  
See Araujo, P. M. S.  
Subramaniam, A. K.  
Evaluation of Internal Combustion Engine Valve Trains by an Empirically Tuned Simulation Model. 78-DGP-9.
- Suhner, O. H. and Hutler, M.  
How to Design and Utilize Flexible Shafts in Products. 78-DE-22.
- Sullivan, D.  
See Fuller, R. H.
- Summers, D. A., Barker, C. R. and Selberg, B. P.  
Can Nozzle Design be Effectively Improved for Drilling Purposes. 78-Pet-51.
- Sun, C. T., Lo, H., Bogdanoff, J. L. and Chou, Y. F.  
Dynamic Response of a High Pressure Steam Pipe in a Fossil Fuel Power Plant. 78-PVP-75.
- Sun, T. H.  
See Prager, R. C.
- Sund, D. S.  
Reaction Control System Thrusters for Space Shuttle Orbiter. 78-WA/Aero-17.
- Sundararajan, C.  
Ice Floe Induced Structural Vibrations. 78-Pet-21.
- Sundquist, B. E.  
See Roth, T. S.
- Suresh, S.  
See Rubayi, N. A.
- Sutherland, W. H.  
Uncertainties in Fast Breeder Reactor Fuel Pin Cladding Stress and Strain Calculations.  
78-PVP-54.
- Svenson, F. C.  
See Edwards, P. R.
- Svestka, J. A., Dornfeld, D. and Gil, R. A.  
A New Heuristic for improving the Efficiency of Numerically Controlled Punch Presses.  
78-DET-86.
- Swanson, L. L.  
See Schuetzenuebel, W. G.
- Swedish, M. J.  
See Epstein, M.
- Sweet, L. M. and Keane, M. J.  
Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems. 78-WA/DSC-32.
- Switzer, T. A. and Hesketh, H. E.  
The Effect of the Hi-Vol Methodology on Air Quality Modeling. 78-WA/APC-11.
- Symmons, W. R.  
See Heidebrecht, A. C.
- Szenasi, F. R.  
See Wachel, J. C.
- Szewalski, R. and Khalifa, H. E.  
A New Approach for Increasing the Thermal Efficiency of Steam Power Cycles. 78-JPGC-Pwr-2.

## T

- Tabakoff, W., Kotwal, R. and Hamed, A.  
Erosion Study in Turbomachinery Affected by Coal Ash Particles. 78-GT-136.
- Tabakoff, W.  
See Khalil, I.
- Tabi, R.  
See Fettahlioglu, O. A.
- Tablieriou, J. P. and Walsh, D. J.  
Determination of Stress Intensification Factors for the Code Qualification of Integrally Reinforced Branch Connections. 78-PVP-99.
- Tachery, J.  
See Hagan, D.
- Tadros, S. E. and Erian, F. F.  
Generalized Laminar Heat Transfer from the Surface of a Rotating Disk. 78-WA/HT-29.
- Taft, C. K. and Hamed, T. J.  
Electro-Fluid Pulse-Width Modulated Valve.  
78-WA/DSC-8.
- Takagi, T., Ogasawara, M. and Yoshimoto, T.  
Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace. 78-WA/Fu-2.
- Takahara, K.  
See Sakata, K.
- Takahashi, Y.  
See Tomizuka, M.
- Takase, H.  
See Nishikawa, N.
- Takemoto, M., Kishi, M., Hayakawa, T., Mii, T. and Sakamoto, H.  
An Analytical Method for Fixed Tubesheet Heat



Exchangers and Its Experimental Verification.  
78-PVP-77.

**Takeuchi, I.**

See **Nara, Y.**

**Talbert, W. M.**

See **Carlson, N. G.**

**Tang, J.**

See **Konz, S.**

**Tate, M. C., Hollingsworth, L. M. and Asbill, W. T.**

Subsea Chamber Design for the Dry Containment of Wellhead Equipment. 78-Pet-43.

**Taylor, C. A. M.**

Marine Gas Turbine Inlet and Exhaust Systems for the R. N. 78-GT-190.

**Taylor, D. L.**

See **Randall, S. E.**

**Techapatanarat, P.**

See **Konz, S.**

**Teixeria, A. A.**

Conduction-Heating Considerations in Thermal Processing of Canned Foods. 78-WA/HT-55.

**Tell, E. N.**

See **Yakut, M. M.**

**Ten Eyck, R. L.**

See **Ali, M. W.**

**Termuehlen, H.**

See **Schleithoff, K.**

**Tessarzik, J. M.**

See **Smalley, A. J.**

**Tessier, M. J.**

See **Alz, R. W.**

**Tharp, T.**

See **Hartnett, M. J.**

**Thoen, T. and Dale, J.**

EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities. 78-Pet-18.

**Thomas, A. L.**

See **Dannenmaier, J. H.**

**Thomas, J. M., Cipolla, R. C., Ranjan, G.V. and Derballian, G.**

Mechanical Analysis of Steam Generator Tube Denting. 78-NE-5.

**Thompson, C. D.**

See **Reysa, R. P.**

**Thompson, D., Chigler, N. A. and Ungut, A.**

Flame Characteristics of a NASA Contra Swirler Module. 78-GT-163.

**Thompson, D. E.**

Propeller Unsteady Thrust Due to Operation in Turbulent Inflows. 78-GT-94.

**Thompson, G. H.**

See **Gardner, B. E.**

**Thompson, J. S.**

Aircraft Fuel Pumps - Where We're At (A Review of Some Problems and Their Current Solutions). 78-GT-10.

**Thoms, R. L., Eldemiller, R. I. and Hilding, R. K.**

A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt. 78-Pet-79.

**Thoms, R. L.**

See **Eldemiller, R. I.**

**Thornton, W. A.**

See **Willmert, K. D.**

**Thorpe, C. R.**

See **Stevens-Guille, P. D.**

**Thorsteinsson, T.**

See **Tomasson, J.**

**Thurgood, M. J.**

See **Simonen, F. A.**

**Thurston, G. C. and Allen, D. T.**

Core Auxiliary Heat Exchanger Design for HTGR. 78-NE-9.

**Tiffany, C. F. and Cowie, W. D.**

Progress on the ENSIP Approach to Improve Structural Integrity in Gas Turbine Engines/An Overview. 78-WA/GT-13.

**Timmis, P. H.**

See **Beard, M. G.**

**Tippett, J. R.**

Efficiency and Amplification in Jet Pumps. 78-WA/DSC-7.

**Tippett, J. R.**

See **Oruh, S. N.**

**Tipton, J.**

A Digital Approach to Industrial Gas Turbine Control. 78-GT-39.

**Tison, J. D.**

See **Vance, J. M.**

**Tleimat, B. W.**

See **Laird, A. D. K.**

**Tobals, S. A.**

See **Das, M. K.**

**Tokel, H. and Sisto, F.**

Dynamic Stall of an Airfoil with Leading Edge Bubble Separation Involving Time Dependent Re-Attachment. 78-GT-194.

**Tomasson, J. and Thorsteinsson, T.**

Drillhole Stimulation in Iceland. 78-Pet-24.

**Tombach, H.**

A Pragmatic Approach to the Engineers Involvement in Public Policy Making. 78-WA/TS-1.

**Tomita, N.**

See **Nishikawa, H.**

**Tomizuka, M., Auslander, D. M. and Takahashi, Y.**

A Tutorial Introduction to Discrete Time Optimal Control. 78-WA/DSC-18.

**Toril, T., Hirasawa, S., Kuwahara, H., Yanagida, T. and Fujie, K.**

The Use of Heat Exchangers with THERMOEX-CEL's Tubing in Ocean Thermal Energy Power Plants. 78-WA/HT-65.

**Touchton, G. L.**

See **Dibelius, N. R.**

**Townes, H. W., Mozer, C. J., Reihman, T. C. and Ameel, T. A.**

Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters. 78-WA/HT-22.

**Trayser, D. A.**

See **Hazard, H. R.**

**Trezek, G. J.**

See **Glaub, J. C.**

**Troha, W. A.**

Engine Life Usage Experience of YF17/YJ101 Flight and Ground Testing. 78-WA/GT-11.

**Troha, W. A.**

See **McTasney, R.**

**Trusch, R. B. and Roebelen, G. J.**

A Thermoelectric Integrated Membrane Evaporation System. 78-ENAs-19.

**Tsang, A. and Berry, J. T.**

A Three-Dimensional Finite Element Analysis of the Double Torsion Test. 78-PVP-96.

**Tso, W. K.**

See **Heidebrecht, A. C.**

**Tuan, P. D. and Verchery, G.**

Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces. 78-WA/Aero-6.

**Tuason, E. B.**

See **Ray, D.**

**Turkstra, C. and Grigoriu, M.**

Generalized Second-Moment Reliability Analysis. 78-PVP-105.

**Tuttle, R. N.**

The Effects of H<sub>2</sub>S on Engineering Design of Oil and Gas Wells and Facilities. 78-Pet-5.

## U

**Ueyama, H.**

See **Ohtsuka, N.**

**Ungut, A.**

See **Thompson, D.**

**Urdaneta-B, A. H. and Schmidt, P. S.**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes. 78-WA/HT-64.

**Uzui, H.**

See **Sakata, K.**

**Uyehara, O. A. and Myers, P. S.**

Sound Power Levels of Large Engines Measured in Semi-Reverberant Environments. 78-DGP-20.

## V

**Vaka, G. A.**

See **Loeffler, F. J.**

**Valentin, R. A.**

See **Shin, Y. W.**

**Valentin, R. A.**

See **Youngdahl, C. K.**

**Valierani, E. and Degli Esposti, P. L.**

Active Thermal Control Subsystem Development. 78-ENAs-6.

**Valierani, E.**

See **Filippi, F.**

**Vance, J. M. and Tison, J. D.**

Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery. 78-Pet-26.

**Van Echo, J. A. and Simonen, F. A.**

Strength of 304L Stainless Steel and Inconel Alloy 601 at Temperatures Above 1000 C. 78-PVP-31.

**Van Hagan, T. H. and Carnavos, T. C.**

Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers. 78-WA/HT-20.

**Van Meter, D. B.**

See **Hall, J. L.**

**Van Wallegghem, W.**

See **Apostolides, M.**

**Verchery, G.**

See **Tuan, P. D.**

**Verdonk, G.**

Vaned Diffuser Inlet Flow Conditions for a High Pressure Ratio Centrifugal Compressor. 78-GT-50.

**Vijay, D. K.**

See **Creates, D. H.**

**Vinson, J. R.**

See **Sloan, J. G.**

**Viskanta, R.**

See **Chow, L. S. H.**

**Villet, G. C.**

See **Pia-Barby, F. E.**

**Vogt, R. L.**

See **Dibelius, N. R.**

**Von Schwerdtner, O.**

See **Becker, B.**

**Von Turkovich, B. F.**

See **Ramalingam, S.**

**Vu, D. M.**

See **Chien, Y. K.**

## W

**Waal, J. C.**

See **Gwinn, J. M.**

**Wachel, J. C., Baldwin, R. M. and Szenasi, F. R.**

Dynamic Vibrations of Stationary Engines. 78-DGP-1.

**Wacker, E. A., Sander, W. and Schmidt, K.**

Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption. 78-DGP-16.

**Wald, G. A., Dreyer, H. S. and Smith, S. U.**

Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering. 78-WA/APC-5.

**Waldren, N. E. P.**

See **Morris, A. W. H.**

**Walker, B. H.**

See **Appl, F. C.**

**Walleneberg, F. T., Franz, K., Dullaghan, M. E. and Schrol, W. E. J.**

Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics - Wear Tests With Cotton and Dacron/Orion Fabrics. 78-TEX-5.

**Walsh, D. J.**

See **Tabierliou, J. P.**

**Walsh, T. F.**

Application of Low-Btu Producer Gas To Industrial Steam Generation. 78-IPC-Pwr-2.

**Walsh, W. K.**

See **Gupta, B. S.**

**Walther, G. C.**

See **Larsen, D. C.**

**Wander, S. M.**

See **Rieke, K. L.**

**Wang, A. S. D.**

A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites. 78-WA/Aero-1.

**Wang, C. P. and Brynjolfsson, A.**

Determination of Specific Heat of Meat. 78-WA/HT-57.

**Wang, C. P. and Brynjolfsson, A.**

Heat Transfer and the Killing of Bacteria in Thermal Sterilization of Meat Roll. 78-WA/HT-56.

**Wang, C. Y., Chu, H. Y. and Chang, Y. W.**

A Coupled Eulerian-Lagrangian Method for Analyzing Nonlinear Fluid-Structure Interaction Transient in Reactors. 78-PVP-58.

**Wang, S. S.**

An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites. 78-WA/Aero-8.

**Warner, J. A.**

See Zandi, I.

**Wasp, E. J.**

A Perspective on Coal Slurry Pipelines for the Next Decade. 78-Pet-65.

**Watanabe, T.**

See Nakase, Y.

**Waterland, L. R. and Salvesen, K. G.**

Source Analysis Modeling for Environmental Assessment. 78-WA/APC-10.

**Waterman, N. A.**

The Influence of Market Research on Product Design and Materials Selection. 78-DE-3.

**Watkins, L. W.**

Operating Experience with Marine Riser Buoyancy. 78-Pet-56.

**Watson, L. W.**

Operating Experience with Marine Riser Buoyancy. 78-Pet-56.

**Watson, E. H.**

See Ford, H.

**Watson, N., Marzouk, M. and Baazazi, Z.**

An Evaluation of Two Stage Turbo-charging for Efficient High-Output Diesel Engines. 78-DGP-2.

**Wayne, R. W.**

See Anger, R. T.

**Wayner, P. C.**

See Renk, F. J.

**Weaver, D. S. and Grover, L. K.**

Cross Flow Induced Vibrations in a Tube Bank. 78-PVP-25.

**Webb, B. C.**

Art of Pipeline Pigging. 78-Pet-74.

**Webb, P. R.**

See Hazard, H. R.

**Webb, R. L.**

Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection. 78-WA/HT-61.

**Webster, W. D.**

See Davis, R. L.

**Wedlock, M. I.**

See Lister, D. H.

**Wei, B. C.**

See Fox, J. N.

**Weiner, D., Aschner, F. S. and Dayan, J.**

Nonlinear Digital Simulation And Minimum Fuel Control of a Jet Type Gas Turbine Power Generating Unit. 78-GT-43.

**Weingart, M., Stockinger, S. and Rossmassler, R.**

Waste Tritium Cleanup for the Tokamak Fusion Test Reactor (TFTR) 78-JPGC-NE-15.

**Weisel, M. P.**

See Kramer, L. D.

**Wells, C. H.**

See Cook, T. S.

**Wells, N. S.**

See Hodge, R. I.

**Wen, L. C.**

See Wu, Y. C.

**Wendt, P. G., Rodgers, C. and Sapiro, L.**

Development and Closed-Loop Testing of High Efficiency Compressors for Use with a 7000-kw Gas Turbine. 78-GT-189.

**Wendt, R. P.**

The Kinetics of Ironite Sponge H<sub>2</sub>S Reactions. 78-Pet-76.

**Wernli, R. L.**

Design for Remote Work in the Deep Ocean. 78-WA/OCE-4.

**Westmoreland, J. S.**

See Carlson, N. G.

**Westover, J. B.**

See Fohey, M. F.

**Whaley, P. W.**

A Distributed Optimum Control Law for Airborne Electro-Optical Packages. 78-WA/DSC-39.

**Wheeler, E. L.**

Development of the Garrett GTPF990 - A 5000-Horsepower Marine and Industrial Gas Turbine Engine. 78-GT-44.

**White, R. C.**

See Bush, W. H.

**White, R. L.**

See Reynolds, R.

**White, T. L.**

Application of Energy Conservation Methods to Industrial Refrigeration Systems. 78-IPC-Pwr-5.

**Whitehead, A.**

See Eskesen, J. H.

**Whiteman, D. E.**

See Anderson, C. A.

**Whitfield, A.**

Rationalization of Empirical Loss Coefficients and Their Application in One Dimensional Performance Prediction Procedures for Centrifugal Compressors. 78-GT-177.

**Whiting, A. R. and Rosow, D. F.**

Recent Experience in Inservice Examinations. 78-NE-13.

**Whitney, D. E.**

Discrete Parts Assembly Automation - An Overview. 78-WA/DSC-11.

**Wicks, A. L.**

See Rieger, N. F.

**Wied, E.**

See Schilling, H. D.

**Wieneke, S. A.**

See Parsons, J. D.

**Wilke, D.**

See Alt-Ali, M. A.

**Wilkes, C. and Russell, R. C.**

The Effects of Fuel Bound Nitrogen Concentration and Water Injection of NO<sub>x</sub> Emissions from a 75-MW Gas Turbine. 78-GT-89.

**Williams, C. R.**

See Dropek, R. K.

**Williams, G. N.**

See Cheadle, B. A.

**Williams, H. A.**

See Kotlin, J. J.

**Williamson, D. and Fistere, J.**

Design of A Family of Packages for A 7500-kw Industrial Gas Turbine. 78-GT-37.

**Willmert, K. D., Thornton, W. A. and Khan, M. R.**

A Hierarchy of Methods for Analysis of Elastic Mechanisms with Design Applications. 78-DET-56.

**Wilson, D. E.**

See Wright, J. P.

**Wilson, E. A.**

Applying Plastics in a Highly Reliable, Low Cost Cooling System for Microelectronics. 78-DE-W-3.

**Wilson, J.**

See Heidebrecht, A. C.

**Wilson, J. F.**

Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves. 78-WA/RT-13.

**Wilson, J. M.**

See Reed, N. G.

**Wilson, R. M.**

The Elastic-Plastic Behavior of a Tube During Expansion. 78-PVP-112.

**Wilson, W. B.**

Cogeneration - Some Hardware and System Design Parameters. 78-IPC-Pwr-6.

**Wilson, W. B. and Kovacic, J. M.**

Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery Systems. 78-Pet-3.

**Wilson, W. B.**

Energy-Conserving Cogeneration - Performance, Economics and Legislation. 78-WA/Ener-5.

**Wimberly, G. L.**

A Demonstration of Refueling Outage Improvements. 78-JPGC-NE-11.

**Wink, R. E.**

See Fowler, J. R.

**Winnick, J.**

See Abdel-Salam, O.

**Witmer, E. A.**

See Meredith, D.

**Wittekindt, W.**

See Bammerl, K.

**Witton, J. J.**

See Russell, R. J.

**Wolf, E. J.**

See Greenfield, L. P.

**Wong, K. F. and Dybbs, A.**

Energy Equations for Convection in Saturated Porous Media. 78-HT-54.

**Woods, R. L.**

A Fluidic Partial Pressure Sensor. 78-WA/DSC-22.

**Wormley, D. N.**

See Sinha, P. K.

**Worsae-Schmidt, P. and Bechloff Nielsen, P.**

Design of a Combined Solar Collector/Absorber/Desorber for a Solid-Absorption Refrigerating System. 78-HT-35.

**Wright, A. P., Nash, J. H. and Roderique, D. D.**  
Energy Implications of Industrial Effluent Regulations. 78-TS-1.

**Wright, J. P. and Wilson, D. E.**

Fabrication and Test of a 70 K Heat Pipe Radiator. 78-ENAs-16.

**Wright, R. W.**

The Design and Development of Heated, Impact Resistant Windshields for Locomotives. 78-RT-5.

**Wu, K. F.**

See Palmer, M. E.

**Wu, P. S.**

See Arnold, J. N.

**Wu, S. M.**

See Madhwal, A. N.

**Wu, Y. C. and Wen, L. C.**

Solar Receiver Performance of Point Focusing Collector System. 78-WA/Sol-5.

**Wullaert, R. A., Oldfield, W. and Server, W. L.**  
Reference Fracture Toughness Curves for Irradiated Pressure Vessel Steels. 78-Mat-20.

**Wynveen, R. A.**

See Yang, P. Y.

**Wysk, R. A., Barash, M. M. and Moodie, C. L.**

An Analysis of Some Production Planning Practices. 78-WA/Prod-13.

## Y

**Yakut, M. M., Magargee, D. L. and Tell, E. N.**

Life Support Systems for Biological Specimens in the Shuttle/Spacelab. 78-ENAs-38.

**Yamabe, M.**

Occurrence Mechanism of Turbine Hysteresis Phenomenon of Francis-Type Pump-Turbine. 78-WA/FE-17.

**Yamanaka, K.**

See Kohzu, M.

**Yan, M. J.**

Seismic Analysis of Piping Systems on Rocking Foundation Mat. 78-PVP-40.

**Yang, P. Y., Gyorki, J. R. and Wynveen, R. A.**

Instrumentation for Controlling and Monitoring Environmental Control and Life Support Systems. 78-ENAs-40.

**Yanichko, S. E. and Mager, T. R.**

Effects of Irradiation on A508 Class 2 and 3 Forging Grade Steels. 78-Mat-21.

**Yangida, T.**

See Torii, T.

**Yao, J. T. P.**

See Anderson, C. A.

**Yao, L. S., Catton, I. and McDonough, J. M.**

The Longitudinal Water Boundary Layer Along a Nonisothermally Heated Horizontal Cylinder. 78-HT-19.

**Yao, N. P.**  
 See **Choi, K. W.**  
**Yas'ko, O. I.**  
 See **Bublevsky, A. F.**  
**Yeh, G. C. K.**  
 Reduction of Allowable Seismic or Weight Piping Span Length Due to Presence of a Concentrated Mass. 78-PVP-19.  
**Yen, Y.-C.**  
 Heat Transfer and Onset of Convection in a Melted Water Layer. 78-HT-41.  
**Yoshimoto, T.**  
 See **Takagi, T.**  
**Yoshimura, S.-I.**  
 See **Fukumoto, H.**  
**Youn, K. C.**  
 Catalytic Reduction of Nitrogen Oxides Emitted from Stationary Sources. 78-Pet-29.  
**Young, M. F. and Jenkins, P. E.**  
 Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes. 78-WA/Sol-3.  
**Young, M. F.**  
 See **Jenkins, P. E.**  
**Young, W. B.**  
 See **Martus, W. E.**

**Youngdahl, C. K., Kot, C. A. and Valentin, R. A.**  
 Pressure Transient Analysis in Piping Systems Including the Effects of Plastic Deformation and Cavitation. 78-PVP-56.  
**Yung, D., Lorenz, J. J. and Ganic, E. N.**  
 Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators. 78-WA/HT-35.

## Z

**Zachariason, R. A.**  
 See **Edwards, E. F.**  
**Zachman, N. J., Hillberry, B. M. and Kettelkamp, D. B.**  
 Design of a Load Simulation for the Dynamic Evaluation of Prosthetic Knee Joints. 78-DET-59.  
**Zaki, H.**  
 See **Baz, A.**  
**Zakkay, V. and Miller, G.**  
 Advanced Heat Exchanger Configurations for Coal-Fired Fluidized Beds. 78-WA/HT-40.  
**Zandi, I., Warner, J. A. and Mersky, R.**  
 Cost Comparison Among Various Modes of Freight

Transport Including Freight Pipeline. 78-Pet-72.  
**Zatarain, A. M. and Janna, W. S.**  
 Economics of Wind Generated Power. 78-Pet-80.  
**Zehnder, J.**  
 The Alusuisse Truck. 78-WA/RT-15.  
**Zelenka, T.**  
 See **Machacek, S.**  
**Zeren, F., Holmes, R. E. and Jenkins, P. E.**  
 Design of a Freon Jet Pump for Use in a Solar Cooling System. 78-WA/Sol-15.  
**Zimmer, G. A.**  
 See **Abuaf, N.**  
**Zipkin, M. A.**  
 See **Hemsworth, M. C.**  
**Zirkelback, C. E.**  
 See **Anderson, H. G.**  
**Zollinger, E. and Gregory, N.**  
 Optimization Analysis of CCGT Nuclear Power Plant with Application to the HHT 3000 MWth Commercial Plant (HHT-Project) 78-GT-16.  
**Zolinger, H. J.**  
 See **Engeli, M.**  
**Zurippe, C. F.**  
 See **Lowe, A. L.**  
**Zury, H. L.**  
 See **Cho, S. M.**





# Index to MECHANICAL ENGINEERING

Volume 101, January-December 1979

## A

- Abdelhamid, A. N.** Distinctions Between Two Types of Self Excited Gas Oscillations in Vaneless Radial Diffusers (79-GT-58) (A) **Jl 92**
- Abdelrehim, Z.** Heat Transfer in Turbulent Recirculatory Flows Affected by Buoyancy Forces in Rectangular Cavities (79-HT-77) (A) **N 105**
- Abou-Sayed, A. S.** Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 99**
- Abradable Coating System**  
Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 99**
- Abrasion**  
Abrasion of WC-Co Alloys by Quartz (78-Lub-19) (A) **Ja 95**
- Abrasive Coatings**  
Application of Abrasive Coatings to Clearance Control in the Gas Turbine (79-GT-48) (A) **Ag 98**
- Absorbers**  
High-Temperature Solar Converter (BTR) **Ja 44**
- Absorptivity Determination**  
Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**
- Abusaf, N.** Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**; Response Characteristics of Optical Probes (78-WA/HT-3) (A) **Mr 92**
- Aburwin, B. A.** Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Je 95**
- Aburwin, B. A.** Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-18) (A) **Je 99**
- Accelerated Durability Test Program**  
An Accelerated Durability Test Program for Diesel Truck Engines (78-DGP-23) (A) **Ja 88**
- Acceleration Fuel Schedules**  
Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Jl 101**
- Acceleration Measurements**  
Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**
- Achenbach, J. D.** Elections to Fellow Grade **S 94**: Small-Scale Yielding at the Tip of a Through-Crack in a Shell (79-PVP-89) (A) **S 100**
- Ackerman, A. J.** America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 94**
- Acosta, A. J.** Elections to Fellow Grade **D 93**
- Acoustic Characteristics**  
Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Je 98**
- Acoustic Emission Measurement**  
Acoustic Emission Measurement and Analysis System (BTR) **O 47**
- Acoustic Flowmeters**  
Acoustic Flowmeters for Pipelines **O 28**  
An Award for Acoustic Flowmeters (ES) **O 18**
- Acoustic Modulation**  
Acoustic Control of the Exit Plane Thermodynamic State of a Combustor (79-GT-180) (A) **Ag 100**
- Acoustics**  
Influence of Heat Release Distribution on the Acoustic Response of Long Burners (79-DET-31) (A) **N 112**

Months are denoted by **boldface** letters:

January	<b>Ja</b>	July	<b>Jl</b>
February	<b>F</b>	August	<b>Ag</b>
March	<b>Mr</b>	September	<b>S</b>
April	<b>Ap</b>	October	<b>O</b>
May	<b>My</b>	November	<b>N</b>
June	<b>Je</b>	December	<b>D</b>

## Code

(A)	Abstract	(Ed)	Editorial
(BR)	Book Review	(EN)	Educational News
(BTR)	Briefing the Record	(ES)	Energyscope
(C)	Letters & Comments	(IF)	International Focus
(CT)	Computers and Technology	(NB)	News Brief
(CC)	Convocation	(NR)	ME News Roundup
(CB)	Communiqués	(PS)	Personality Speaking
(CU)	Current Books	(TL)	Technical Literature
	Centennial Update	(WW)	Washington Window

## Acrylic Plastic Windows

Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) (A) **F 130**

## Active Control Technique

Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**

## Active Magnetic Bearings

Active Magnetic Bearings (BTR) **F 58**

## Active Recoil Mechanisms

Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**

## Activities Study

Robot Arms for Assembly (78-WA/DSC-37) (A) **Ap 99**

## Active Suspensions

Are Active Suspensions Really Necessary? (78-WA/DE-12) (A) **Mr 86**

**Adams, D. R.** Progress in Understanding and Control of Ring Lubrication (78-DGP-25) (A) **Ja 89**

**Adams, G. G.** A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) (A) **S 106**

**Adams, J. C., Jr.** Low Reynolds Number Effects on Sharp Cone Turbulent Heat Transfer Under Hypersonic Wind Tunnel Conditions (79-HT-89) (A) **N 106**

**Adams, N. J. L.** A Damage Tolerant Design and Inspection Philosophy for Nuclear and Other Pressure Vessels (79-PVP-124) (A) **S 104**

**Adams, R. D.** Defect Location in Structures by a Vibration Technique (79-DET-46) (A) **N 114**

## Adaptive Control

Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) **Ap 94**

## Adhesion Force

The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**

## Adhesive Lap Joints

Stresses in Adhesive Lap Joints with Pre-Bent Adherends (79-DET-105) (A) **D 106**

**Adkins, R. C.** A Double Acting Variable Geometry Combustor (79-GT-197) (A) **Jl 104**

**Adler, Alan** Telemetry for Turbomachinery **Mr 36**

## Administration Methods

Improving Productivity Through Engineering Administration (78-WA/Mgt-3) (A) **Je 91**

## Advanced Low-Emissions Program

The Advanced Low-Emissions Catalytic-Combustor Program: Phase I—Description and Status (79-GT-192) (A) **Jl 103**

## Advanced Open Cycle Turbine

Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Jl 103**

## Advanced Reactor Technology

Decontaminating Reactor Components (BTR) **Mr 48**

## Aerial Photography

Helicopter Position Stabilizing System (BTR) **My 55**

## Aero-Derivative Gas Turbines

Power Station Experience with Retrofitted Programmable Fuel Management and Sequencing Controllers for Aero-Derivative Gas Turbine (79-GT-191) (A) **Ag 100**

## Aerodynamic Behavior

The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Jl 96**

## Aerodynamic Characteristics

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Jl 96**; Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Jl 97**

## Aerodynamic Design

Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Jl 95**

A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**

## Aerodynamic Flow-Path Analysis

A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Jl 103**

## Aerodynamic Losses

Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers (78-WA/HT-18) (A) **Ap 90**

## Aerodynamic Modifications

Low Frequency Gas Turbine Noise (79-GT-196) (A) **Jl 104**

## Aerodynamic Properties

The CH-46 Rotor Blade Transition from Metal to Composite Materials (78-WA/Aero-9) (A) **Ap 101**

## Aerodynamic Transport

A Phase-Velocity Description of Aerodynamic and Electrostatic Transport of Cotton Fibers and Trash (79-Tex-1) (A) **D 99**

## Aerodynamics

Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance (78-Pet-28) (A) **F 122**

Aerodynamics of the Heat Exchangers and Their Arrangement in Large Dry Cooling Towers (78-WA/HT-19) (A) **Ap 91**

Cross-Ventilation of Underground Rail Tunnels (78-WA/FE-14) (A) **Je 89**

Design and Application of a Single Gas Turbine Matched

with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **JI 94**

**A Double Acting Variable Geometry Combustor** (79-GT-197) (A) **JI 104**

Improving Turbine Component Efficiency (79-GT-176) (A) **JI 102**

Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **JI 93**

The Time-Variant Aerodynamic Response of a Stator Row Including the Effects of Airtol Camber (79-GT-110) (A) **Ag 99**

**Aeroelastic Characteristics**

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-11) (A) **JI 98**, Part II—Stability and Flutter Boundaries (79-GT-112) (A) **JI 97**

**Aeroengine Fan Flutter**

An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **JI 98**

**Aerofolia**

A General Solution for Distorted Flow in Cascades of Aerofolia (79-GT-65) (A) **JI 93**

**Aerospace Engineering**

Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**

An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites (78-WA/Aero-8) (A) **Ap 101**

Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**

The CH-46 Rotor Blade Transition from Metal to Composite Materials (78-WA/Aero-9) (A) **Ap 101**

A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**

Corrosion Failures: Three Case Histories and Their Solutions (78-WA/Aero-23) (A) **Ap 102**

Cross Reinforcement in a GR/EP Laminate (78-WA/Aero-7) (A) **Ap 100**

The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**

Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**

Effective Reliability Testing and Growth Measurement (78-WA/Aero-21) (A) **Ap 102**

Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**

High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**

Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**

Investigation of Characteristic Damage States in Composite Laminates (78-WA/Aero-4) (A) **Ap 100**

Models for Software Reliability (78-WA/Aero-18) (A) **Ap 101**

A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites (78-WA/Aero-1) (A) **Ap 100**

Project Sunrise (78-WA/Aero-15) (A) **Ap 101**

Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**

A Reliable Spline Coupling (78-WA/Aero-11) (A) **Ap 101**

Scanning Microscopy in Microcircuit Failure Analysis (78-WA/Aero-22) (A) **Ap 102**

Torpedo Propulsion Systems (78-WA/Aero-13) (A) **Ap 101**

Utilization of Computer Techniques in Analyzing Production Trend Problems (78-WA/Aero-16) (A) **Ap 101**

**Aerospace Industry**

The Jet Makers: The Aerospace Industry from 1945 to 1972 (CB) **Je 104**

**Aerospace Systems Analysis**

Aerospace Systems Analysis Approach to Energy Conservation in Heating, Ventilating and Air Conditioning Systems (79-ENAS-1) (A) **O 96**

**Aeschbacher, H. J.** Gas Turbine Bucket Corrosion Protection Developments (79-GT-47) (A) **Ag 98**

**Afejuku, W. O.** The Film Cooling Effectiveness of Double Rows of Holes (79-GT-18) (A) **O 93**

**Afinewale, K. A.** A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) (A) **Mr 85**; Interactive

Computer Methods for Design Optimization (78-DET-84) (A) **Ja 96**; A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) (A) **Mr 87**

**Afro-Americans**

More on the Black M.E. at Tuskegee (C) **Ag 40**

**Alshari, G.** High-Frequency Yarn Tension Variations in Spinning (79-Tex-6) (A) **D 100**

**Aging Effects**

Evaluation of Long-Term Aging Effects on Hydraulic Components and Systems (79-DET-104) (A) **D 105**

**Agrawal, A. K.** Dynamic Simulation of LMFBR Plant Under Natural Circulation (79-HT-6) (A) **O 91**

**Agrawal, G. K.** Optimal Design of Helical Springs for Minimum Weight by Geometric Programming (78-WA/DE-1) (A) **Mr 84**

**Agricultural Tractor Application**

The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 89**

**Aguliar, F.** Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Je 89**

**Ahlgren, F. F.** An Analytic Model for Ball Bearing Vibrations to Predict Vibration Response to Distributed Defects (79-DET-87) (A) **D 104**

**Ahner, D. J.** Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **JI 92**

**Alman, W. R.** The L.L.L. Underground Coal Gasification Project: 1978 Status (79-PVP-93) (A) **S 100**

**Ainsworth, R. W.** Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **JI 90**

**Air**

Waste Heat Disposal to Air with Mechanical and Natural Draft—Some Analytical Design Considerations (78-WA/HT-17) (A) **Mr 94**

**Air-to-Air Intercooled Engine**

The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 89**

**Air Bag**

Air Bag—A Health Threat? (BTR) **Ja 41**

**Air Blast Loading**

The Response of a Long Cylinder to Lateral Air Blast Loading (79-DET-44) (A) **N 113**

**Air Compressor**

New Variable Vane Two-Shaft Gas Turbine (BTR) **D 58**

**Air Compressor Trains**

Design Audit, Testing and Commissioning of Two 9000 HP Centrifugal Air Compressor Trains (78-Pet-48) (A) **F 125**

**Air-Conditioned Buildings**

Optimum Design of Air-Conditioned Buildings (79-DET-119) (A) **D 119**

**Air Conditioning**

Aerospace Systems Analysis Approach to Energy Conservation in Heating, Ventilating and Air Conditioning Systems (79-ENAS-1) (A) **O 96**

Solar-Powered Home Air Conditioning (BTR) **JI 49**

**Air Consumption**

Air Consumption and Nitrogen Oxide Emissions of Charge Cooled Engines (78-DGP-12) (A) **Ja 87**

**Air-Cooled Gas Turbine Blades**

Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**

**Air Cooling**

Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine (78-DGP-10) (A) **Ja 87**

Compact Diesel Engines in Traction Applications (78-DGP-8) (A) **Ja 87**

Cooling Air in Turbulent Flow with Multi-Passage Internally Finned Tubes (78-WA/HT-52) (A) **Mr 96**

Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) (A) **Ja 88**

**Air Cycle Machine**

The Use of a Positive Displacement Air Cycle Machine in a Closed-Loop Environmental Control System (79-ENAS-6) (A) **O 88**

**Air Drag**

Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) (A) **Ja 92**

**Air Enclosures**

Heat Transfer in Air Enclosures of Aspect Ratio Less Than One (78-WA/HT-7) (A) **Mr 93**

**Air-Filled Cavities**

Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**

**Air Flow**

Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **JI 99**

**Air/Fuel Mixtures**

Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **JI 100**

**Air Inlet Conditions**

The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Je 100**

**Air Jets**

Application of Ion-Drain Air Jets to Augment Airborne Equipment Cooling (79-ENAS-12) (A) **O 87**

**Air-Modulated System**

An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) (A) **Ap 95**

**Air Policy Analysis**

Air Policy Analysis for the Development of Western Energy Resources (78-TS-4) (A) **F 129**

**Air Pollutant Emissions**

Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**

**Air Pollution**

Coal Use Can Triple, But at Cost to Public and Industry (BTR) **O 48**

New System Samples Stack Gases (EN) **O 61**

Pollution and Policy: A Case Study on California and Federal Experience with Motor Vehicle Air Pollution, 1940-1975 (CB) **Mr 98**

Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**

Prevention of Significant Deterioration (78-TS-3) (A) **F 129**

**Air Pollution Control**

Catalytic Converter Research (EN) **JI 57**

Closed Loop Source Monitoring Saves Energy and Money (78-WA/APC-6) (A) **Ap 103**

Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**

Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **JI 104**

The Effect of the Hi-Vol Methodology on Air Quality Modeling (78-WA/APC-11) (A) **My 96**

Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers (78-WA/APC-1) (A) **Ap 102**

Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) (A) **My 96**

Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**

Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) (A) **My 96**

Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) (A) **My 97**

Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**

Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**

Source Analysis Modeling for Environmental Assessment (78-WA/APC-10) (A) **My 96**

Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**

**Air Preheaters**

Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 94**

**Air Quality**

Effects of Clean Air Act Amendments of 1977 on Construction or Modification of Natural Gas Processing Plants (78-Pet-10) (A) **Ja 97**

The Wrong Villain (ES) **Ag 19**

**Air Quality Levels**

The Social Gamble: Determining Acceptable Levels of Air Quality (CB) **S 111**

## Air Quality Modeling

The Effect of the Hi-Vol Methodology on Air Quality Modeling (78-WA/APC-11) **My 96**

## Air-Storage

Air-Storage Gas-Turbine Plant (IF) **S 64**

## Air Systems

Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System (78-DGP-5) (A) **Ja 86**

## Air Transportation

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**

## Air Washer Operation

Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy (78-WA/PEM-3) (A) **My 95**

## Airborne Electro-Optical Packages

A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) **Ap 99**

## Aircraft

Aircraft Gas Turbine Engine Technology (CB) **Je 104**

Aircraft Humidification System Development (79-ENAS-8) (A) **O 87**

Augmented Vectored Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Je 99**

Chilled Recirculation ECS for Aircraft (79-ENAS-5) (A) **O 86**

Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**

Future Requirements for Environmental Control Systems in Naval Aircraft (79-ENAS-9) (A) **O 87**

Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **Je 90**

Noise Generated from Non-Uniform Clearance of Turbo-Compressors and Fans of Aircraft (79-DET-30) (A) **Je 90**

Physical Characterization of Particulate Material from a Turbine Engine (79-GT-179) (A) **Je 102**

Project Sunrise (78-WA/Aero-15) (A) **Ap 101**

A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Je 99**

Starting Torque Characteristics of Small Aircraft Gas Turbines and APU's (79-GT-95) (A) **Je 96**

## Aircraft Derivative

Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 99**

## Aircraft Engines

The Advanced Low-Emissions Catalytic-Combustor Program: Phase 1—Description and Status (79-GT-192) (A) **Je 103**

Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**

Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Je 98**

Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 90**

## Aircraft Flight Testing

Engine Life Usage Experience of YF17/YJ101 Flight and Ground Testing (78-WA/GT-11) (A) **Ap 89**

## Aircraft Propulsion

Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Je 98**

## Aircraft Undercarriages

Optimization of Aircraft Undercarriages (79-DET-89) (A) **D 104**

## Airfoil Camber

The Time-Variant Aerodynamic Response of a Stator Row Including the Effects of Airfoil Camber (79-GT-110) (A) **Ag 99**

## Airfoil Surface

An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Je 95**

## Airfoils

Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Je 99**

Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Je 101**

Friction Damping of Resonant Stresses in Gas Turbine Engine Airfoils (79-GT-109) (A) **Ag 99**

Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Je 98**

## Airflow

Aerodynamics of the Heat Exchangers and Their

Arrangement in Large Dry Cooling Towers (78-WA/HT-19) (A) **Ap 91**

## Airfoil Technology

Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Je 99**

Ali-Ali, M. A. Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**

Akai, T. J. Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Je 96**; Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Je 97**

Akimoto, H. NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O in Gas Turbine Exhaust Gas (79-GT-69) (A) **Je 92**

Akine, R. E. Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Je 98**

Akkerman, J. W. Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**

Alario, J. Modular Heat Pipe Radiators for Enhanced Shuttle Mission Capabilities (79-ENAS-17) (A) **O 88**

Albrecht, Carl. Developments in Gear Analysis and Test Techniques for Helicopter Drive Systems (79-DE-15) (A) **Ag 102**

## Alcohol-Blended Fuels

An Alcohol Fuel Alternative **N 52**

Allford, L. O. Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Je 99**

## Algae

The Versatile Algae (BTR) **N 61**

## Algal Production System

Initial Investigations of a Shallow-Layer Algal Production System (79-Sci-34) (A) **Ag 96**

## Algorithms

A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Je 89**

A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**

Stochastic Predictions of Solar Cooling System Performance (78-WA/Sci-16) (A) **Je 96**

Ali, M. W. Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **Je 93**

Alikidas, A. C. Heat Transfer Characteristics of a Spark-Ignition Engine (79-HT-76) (A) **N 105**

## Alkali Metal Compounds

Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (78-GT-154) (A) **Je 100**

## All-Ceramic Nozzles

Application of All-Ceramic Nozzle to Radial Flow Turbine (79-GT-96) (A) **Ag 98**

Allaire, P. E. A Finite Length Bearing Correction Factor for Short Bearing Theory (79-Lub-13) (A) **D 103**

Stability and Transient Characteristics of Four Multilobe Journal Bearing Configurations (79-Lub-3) (A) **D 102**

Allen, B. Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy (78-WA/PEM-3) (A) **My 95**

Allen, R. R. Multiport Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) (A) **Je 90**

Allen, R. W. Stochastic Predictions of Solar Cooling System Performance (78-WA/Sci-16) (A) **Je 96**

Alley, V. L., Jr. Revised Theory for the Quantitative Analysis of Fabric Hand (79-Tex-5) (A) **D 106**

## Alloyed Steels

Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Je 98**

## Alloys

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) (A) **Je 95**

Effect of Heat Treatment on Elevated Temperature Fatigue-Crack Growth Behavior of Two Heats of Alloy 718 (78-WA/PVP-3) (A) **My 95**

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) (A) **Je 95**

Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) (A) **S 99**

Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) (A) **S 102**

The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-83) (A) **S 100**

Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Je 97**

New Cast Steel Alloys Readied for Arctic Gas Service (BTR) **S 80**

Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Je 104**

Shape Memory Alloys (IF) **S 65**

Alpay, S. A. Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Je 89**

Alpert, R. L. The Role of Radiation in Pressure Modeling of Upward Fire Spread (79-HT-28) (A) **O 94**

Al-Shareedah, E. M. Calculation of the Geometric Factor Using the Plate Formula for Forged Bevel Gears with a Back Shoulder (79-DE-14) (A) **Ag 102**

Development of a Design Procedure for Forged Bevel Gears with a Web (79-DE-13) (A) **Ag 102**

Altan, T. Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**

## Alternate Energy

Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**

## Alternate Source Development

Energy Policy (CB) **Je 106**

## Alternate Energy Sources

Accelerating the Commercialization on New Technologies (78-WA/TS-4) (A) **Je 94**

Alternate Energy Sources and the Developing Nations (78-WA/TS-3) (A) **Je 94**

A Matter of Survival (C) **O 41**

The Shallow Solar Pond: An Alternative Process Hot Water Generator (79-Tex-8) (A) **D 100**

## Alternative Fuels

Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Je 100**

Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

Operation of GT-225 Diffusion-Flame Combustor on Alternative Fuels Performance, Durability and Emissions (79-GT-138) (A) **Je 92**

## Alternative Operating Procedures

Glad Tidings! (ES) **Je 18**

## Alternative Steam Sources

Evaluation of Alternative Steam Sources for Industrial Cogeneration (79-IPC-Pw-2) (A) **D 101**

## Aluminum

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**

## Aluminum Alloys

A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**

Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**

## Aluminum Chloride

Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**

## Aluminum Polyframe Dome Structure

The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**

## Aluminum Surfaces

Dropletwise Condensation on Rough Aluminum Surfaces (78-WA/HT-42) (A) **Mr 96**

## Aluminum Technology

Aluminum Technology (EN) **D 76**

Amara, G. M. On the Film Cooling Effectiveness Controversy (79-GT-27) (A) **Je 90**

## Ambient Temperatures

Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Je 101**

Starting Torque Characteristics of Small Aircraft Gas Turbines and APU's (79-GT-95) (A) **Je 96**

## Ambient Vibration Monitoring

Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**

Ambrose, M. J. Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Je 104**

Ambrose, R. G. Low Pressure Rod Bundle Critical Heat Flux Tests (79-HT-46) (A) **O 95**

Ameel, T. A. Experimental Measurements and Correla-

tions of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 94**

**American Engineering Association**  
Why Do We Need an AEAT? (PS) **D 81**

**American Inventors**  
Steamboats Come True: American Inventors in Action (CB) **N 119**

**American Society of Mechanical Engineers**  
American Power Conference, review (NR) **Je 60**  
41st Annual American Power Conference, preview (NR) **Ap 63**  
14th Annual Intersociety Energy Conversion Engineering Conference, preview (NR) **Ji 63**  
33rd Annual Management Executives' Conference, preview (NR) **Ag 60**  
1979 Annual Textile Industries Conference, preview **S 90**  
Are you a Potential ASME Dropout? (PS) **S 77**  
1979 ASLE/ASME Lubrication Conference, review (NR) **D 71**  
ASME Auxiliary **Je 78; S 90**  
ASME Council Report to the Membership, 1977-1978 **Ja CR-1**  
ASME Design Engineering Conference, review **Ji 78**  
ASME Energy Policy **Mr 73**  
1978 ASME Film Festival **Ja 102**  
ASME and the Hydrolevel Suit **Mr 73**  
1978 ASME and Ingenieria TAURO of Nuclear, S. A., Continuing Education Course in Argentina, review (EN) **S 73**  
1979 ASME and Ingenieria TAURO of Nuclear, S. A., Continuing Education Course Scheduled in Argentina (EN) **S 73**  
ASME Joins the Tournament of Roses Parade **D 84**  
ASME Loves a Parade (CU) **Mr 72**  
ASME Materials Division Conference on Structural Integrity, review **Ji 80**  
ASME Members' Health Insurance Plans (PS) **Mr 70**  
ASME Members and Pensions (PS) **Je 73**  
ASME National Meetings—The Future? **Ap 78**  
1979-80 ASME Officers Elected **Ja 74**  
ASME: People and Programs **O 24**  
ASME Petroleum Division Awards Eight Scholarships (EN) **Ja 81**  
ASME Policy Perceptions (C) **F 54**  
ASME in Public Affairs—Federal and State (Ed) **F 23**  
ASME Retired Members Survey (PS) **N 85**  
ASME Strategies and Structures for Century Two—Part I: Structures **D 26**  
ASME Symbol **Ja 33**  
1979 ASME Textile Conference, review **D 84**  
1979 ASME Winter Annual Meeting, preview **N 88**  
1979 ASME Winter Annual Meeting Advance Program **O WAM 1-64**  
1978 ASME Winter Annual Meeting Forum Theme, review **F 41**  
Atlanta Conference Considers Professional Problems and Promise (NR) **Mr 58**  
Boiler & Pressure Vessel Code **N 122**  
Breeder Reactor Named ASME Landmark **S 86**  
Centennial Profile **O 20**  
Centennial Profile on Robert H. Thurston **N 34**  
Centennial Profile **D 22**  
Centennial Notes (CU) **N 87**  
Centennial Update **Ja 78; F 113; A 75; Je 75; Ji 74; S 80; O 58**  
Century 2 Emerging Technology Conference: Calls for Papers (CU) **N 87**  
25th Citrus Engineering Conference, preview **Mr 75**  
Codes and Standards **Ja 101; F 135; Mr 100; Ap 105; Je 108; Ji 107; My 109; Ag 109; S 114; O 98; N 120; D 111**  
Codes, Standards and Certificate of Authorization Program—Part 2-Policies, Programs and Organizations **F 31**  
Conference on Structural Integrity Technology preview (NR) **Ap 64**  
1979 Congressional Fellows **Ap 76**  
Contributions to Rose Parade Fund Are Rolling in **My 83**  
Corporate Support of ASME (Ed) **My 19**  
Council of Engineering and Scientific Society Executives, annual meeting, review **O 73**  
Council Votes to Appeal Hydrolevel Case **My 82**  
1979 Design Engineering Show/ASME Conference, preview (NR) **Ap 63**  
1979 Design Engineering Technical Conference, preview (NR) **Ji 63**

1979 Design Technical and Student Design Conferences, review **N 83**  
Dues Ballot Due **Ap 80**  
Dynamics and Control Workshops, preview (NR) **My 64**  
Dynamics of Rolling-Element Bearings Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) (A) **Ja 95; Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) Ji 98; Part III: Ball Bearing Analysis (78-Lub-32) (A) Ja 96**  
Eleventh Annual Offshore Technology Conference, preview (NR) **Ap 64**  
Eleventh Offshore Technology Conference, review (NR) **Ji 56**  
Energy Technology Conference & Exhibition, review **Ja 67**  
Engineering Ad Hoc Visitor's List of the Engineers' COUNCIL FOR Professional Development, update (EN) **Ap 86**  
Engineering Research Grants (NR) **O 57**  
Engineers' Committee on Three Mile Island (NR) **D 74**  
Engineers' Public Affairs Forum, preview (NR) **My 64; review (WW) Ji 70; review Ag 58**  
Ensure ASME's Future—Back the Centennial Membership Drive (PS) **My 74**  
Environmental Effects and the ASME Code (79-PVP-11) (A) **Ag 103**  
"A Few Good Men" (Ed) **D 19**  
Fifth Annual Conference of the American Metric Council, preview (NR) **Mr 60**  
Fifth International Conference on Wind Engineering, preview (NR) **Je 83**  
Fifth World Congress of the International Federation for the Theory of Machines and Mechanisms, preview (NR) **Ap 63**  
Firming Up Plans for the ASME Centennial **Ag 01**  
First International Radwaste Course, review (EN) **Ja 61**  
First Solar Energy Conference, preview (NR) **Ja 59**  
First Student Pugwash Conference, preview (EN) **My 70**  
1979 Gas Turbine Conference and Products Show, preview (NR) **Ja 59**  
Group Life Insurance Plan **O 73**  
How ASME Takes a Stand (WW) **F 78**  
Hydrolevel Update **Ji 82**  
IEEE/ASME Railroad Conference, review (NR) **Ji 61**  
Industrial Films **S 110**  
Industrial Power Conference, preview **O 73**  
International Affairs (Ed) **Ja 17**  
International Computer Technology Conference, review **Ji 74**  
Nuclear Engineering Division Conference, review **Ji 74**  
1980 Pressure Vessels and Piping Conference, review **Ji 74**  
International Conference on Wear of Materials, preview (NR) **Mr 60**  
24th International Gas Turbine Conference and First Solar Energy Meeting, review **My 76**  
14th Intersociety Energy Conversion Engineering Conference, review (NR) **O 54**  
It's Time to Plan Ahead for Future ASME Leaders **Mr 74**  
Joint ASME's Applied Mechanics, Fluids Engineering, and Bioengineering Divisions/Canadian Society of Mechanical Engineers Conference, preview (NR) **My 64**  
1979 Joint ASME/CSME Applied Mechanics-Fluids Engineering-Bioengineering Conference, review **S 81**  
Joint Power Generation Conference, preview (NR) **Ag 59; review (NR) D 68**  
Landmark Program **Ji 83**  
Solar Editors Appointed **Ji 83**  
Section & Region News **Ji 84**  
1979 Lubrication Conference, preview (NR) **S 70**  
Materials Handling Division Awards **S 85**  
National Agenda Conference Reports to Council **Ag 86**  
National Engineering Award (NB) **Je 67**  
18th National Heat Transfer Conference, review (NR) **Je 64; O 88**  
National Historic Mechanical Engineering Landmark **Ap 77**  
New Appliance Technical Committee within Process Industries Division of ASME **D 87**  
New Approach to Magazine (C) **O 42**  
New ASME News Editor **D 87**  
New Bioengineering Award **My 82**  
New Computer Engineering Division **S 84**  
New International Gas Turbine Center **Ag 86**  
New Transactions Journal of Solar Energy Engineering **Je 81**  
Ninth International Conference on the Properties of Steam, preview (NR) **F 89**

Ninth International Symposium on Industrial Robots, review (NR) **Je 65**  
Ninth Intersociety Conference on Environmental Systems, review (NR) **S 66**  
Nominating Proposals are Due Now **Ap 78**  
Nominations for ASME National Officers **Ag 80**  
Nominations for Inventors Hall of Fame (NR) **Je 84**  
Nominees Sought for J. Hall Taylor Medal **Je 82**  
Nominees Wanted for Pi Tau Sigma-ASME Awards **Ja 77; (NR) N 78**  
Nominations for 1980-81 ASME Council **F 114**  
Novel Way to Celebrate ASME's 100th Birthday **D 86**  
1979 Offshore Technology Conference, preview **Ja 13**  
Organizational Changes **S 46**  
Petroleum Division Appoints Student Advisor **Ag 83**  
Petroleum Division Plans Drilling and Management Workshops **Ag 82**  
A Pitch for SWE (Ed) **S 19**  
Pressure Vessels and Piping Conference, preview **My 82**  
Professional Affairs and Ethics **My 86**  
Programs for Retired Members (PS) **Ja 65**  
1979 Reliability and Maintainability Symposium, preview (NR) **Ja 58**  
Reflections on Retiring (WW) **S 78**  
Search for ASME Leadership **D 87**  
Second International Conference on Wear of Materials **Je 78**  
Second International Symposium on Turbulent Shear Flows, preview (NR) **My 65**  
Section & Region News **Ja 79; My 86; Ag 84; O 78; N 93; D 90**  
Section and Region News (Correction) **Je 81**  
Sixth Energy Technology Conference and Exposition, preview (NR) **F 68**  
Sixth Engineers' Conference on Pump Station Design for the Practicing Engineer, preview (NR) **D 75**  
Strategies and Structure for Century Two (CC) **F 79**  
20th Structural Dynamics and Materials Conference, review (NR) **Ag 80**  
Student Intern Program (EN) **Ja 61**  
Student Section News **Ja 82; My 68; Je 70; Ag 66; N 81**  
1979 Summer Annual Meeting, preview **Ag 72**  
Support the Auxiliary! (C) **Je 44**  
Technology Executives Conference, review **My 83**  
Third Annual Energy-sources Technology Conference and Exhibition, preview (NR) **D 74**  
Third National Congress on Pressure Vessel and Piping Technology, review **S 83**  
Twentieth Structural Dynamics and Materials Conference, preview (NR) **F 69**  
Twenty-One Promising Engineering Students: 25 Years Later (NR) **N 76**  
Two Sites Named ASME Landmarks **S 86**  
WAM 79—A Capsule Guide to New York, preview **N 92**  
WAM Sees Big Turnout for M.E. Department Heads and Students (EN) **F 72**  
WAM Student Turnout (C) **My 45**  
Wanted: National Agenda Items **S 87**  
1979 Winter Annual Meeting, preview **Je 79; O 72**  
Winter Annual Meeting Special Publications (TL) **F 132**  
99th Winter Annual Meeting Staff Report, review **F 80**  
Women's Auxiliary **F 110; Ag 78**  
Woman's Auxiliary  
—News from the Sections **Mr 75**  
Woman's Auxiliary **N 94**  
A Year of Mixed Blessings (Ed) **Ji 19**  
**Ammonium Hydrogen Sulfate**  
The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 34**  
**Amplitude Modulation**  
Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) (A) **S 106**  
**Anaerobic Digestion Process**  
Fuel Gas from Biogasification (BTR) **N 62**  
**Analog Recording System**  
Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 95**  
**Analysis Application**  
An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Ji 91**  
**Analysis Modeling**  
Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**  
Source Analysis Modeling for Environmental Assessment



- (78-WA/APC-10) (A) **My 98**
- Analysis Procedure**  
Finite Element Analysis of a Cylinder-to Cylinder Intersection (79-PVP-64) (A) **S 98**
- Head Strength Evaluation of Recessed Threaded Fasteners (79-DET-117) (A) **D 107**
- Analysis System**  
Acoustic Emission Measurement and Analysis System (BTR) **O 47**
- A Family of Programmable Mechanical Test Systems (BTR) **O 49**
- Analytic Model**  
An Analytic Model for Ball Bearing Vibrations to Predict Vibration Response to Distributed Defects (79-DET-57) (A) **D 104**
- Analytical Evaluation**  
The Advanced Low-Emissions Catalytic-Combustor Program: Phase 1—Description and Status (79-GT-192) (A) **Je 103**
- Analytical Investigation**  
Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**
- Analytical Model**  
Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**
- Locomotive Response to Random Track Surface Irregularities (78-WA/RT-12) (A) **My 93**
- A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites (78-WA/Aero-1) (A) **Ap 100**
- Analytical Procedures**  
Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Je 97**
- Analytical Simulation Control Study**  
Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Je 92**
- Analytical Solution**  
An Analytical Solution for Thermal Behavior of the Step Thrust Bearing (79-Lub-19) (A) **D 104**
- Analytical Techniques**  
Approximate Eigenvalues for Systems with Variable Parameters (78-WA/APM-29) (A) **Je 93**
- Anand, D. K.** Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Je 96**
- Anderson, A. W.** Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Je 91**
- Anderson, G. C.** A Boiler Without Water Is . . . (78-Pet-19) (A) **Je 98**
- Anderson, G. D.** Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**
- Anderson, H. G.** An Overspeed Test Program in a Petrochemical Plant (78-DGP-27) (A) **Je 89**
- Anderson, H. M.** Elections to Fellow Grade **N 100**
- Anderson, J. A.** Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**
- Anderson, P. J.** The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**
- Anderson, R. R.** Kline-Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Je 99**
- Anderson, R. R.** Thermal Design for the Infrared Astronomical Satellite (IRAS) Telescope System (79-ENAs-38) (A) **O 90**
- Anderson, R. W.** A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**
- Andronowski, P. M.** A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **Je 105**
- Anger, R. T.** The Performance of Automotive Hand Controls (78-WA/DSC-38) (A) **Ap 99**
- Angle-Ply Composites**  
An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites (78-WA/Aero-8) (A) **Ap 101**
- Angular Vibration Disturbances**  
A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**
- Animal Food Supplement**  
Irradiated Sludge as Cattle Feed (NTR) **S 55**
- Anisotropic Materials**  
Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material—Solid Helium (78-WA/HT-12) (A) **Mr 94**
- Anisotropic Radiative Transfer**  
An Iterative Solution for Anisotropic Radiative Transfer in a Slab (79-HT-23) (A) **O 94**
- Anisotropic Sandwich Plates**  
Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**
- Anisotropic Rough Surfaces**  
Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Je 95**
- Annealing Spring Materials**  
For Spring Materials: A Simple Test of Stress Relief Annealing **F 38**
- Annis, C. G., Jr.** An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Je 99**
- Annual Plates**  
Axisymmetric Bending of Annual Plates (78-WA/APM-27) (A) **Je 93**
- Annular Blade Row**  
Three-Dimensional Lifting-Surface Theory for an Annular Blade Row (79-GT-182) (A) **Je 103**
- Annular Cascades**  
Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Je 99**
- Annular Combustor**  
The Effect of a Sample Lot of Fuel Injectors on Emissions Levels of a Small Gas Turbine (79-GT-165) (A) **Je 101**
- Annular Diaphragms**  
On the Design of Ductile Elastic Annular Diaphragms (79-DET-109) (A) **D 106**
- Annular Disks**  
In-Plane Vibration of Annular Disks Using Finite Elements (79-DET-100) (A) **D 105**
- Annular Gas Path Seals**  
Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Je 95**
- Annular Gas Turbine Combustor**  
Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Je 104**
- Annular Geometry**  
Annular Geometry—Its Effect on Kick Tolerance (78-Pet-63) (A) **F 127**
- Annular Passages**  
Flow Through Non-Circular Annular Passages (79-FE-12) (A) **O 85**
- Annular Step**  
Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Je 89**
- Annular Turbine Cascade**  
The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Je 99**
- Antifrost Law Violation**  
Bloody But Unbowed: A Close Look at the Hydrolevel Case (Ed) **Ap 17**
- Anwar, I.** Computerized Time Transient Torsional Analysis of Power Trains (79-DET-74) (A) **N 118**
- Aortic Arch**  
Clinical Implications of Pressure-Deformation Analysis of the Aortic Arch with Local Variations in the Elastic Property (79-Bio-5) (A) **S 109**
- Apostolides, M.** Design and Fabrication of Petrobas Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**
- Appl, F. C.** Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**
- Applied Mechanics**  
Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) (A) **S 106**
- Application of Hamilton's Principle to Large Deformation and Flow Problems (79-APM-18) (A) **S 107**
- Approximate Eigenvalues for Systems with Variable Parameters (78-WA/APM-29) (A) **Je 93**
- Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) (A) **S 105**
- Axially Symmetric Radial Flow of Rigid/Linear-Hardening Materials (79-APM-20) (A) **S 107**
- Axisymmetric Bending of Annual Plates (78-WA/APM-27) (A) **Je 93**
- Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) (A) **S 108**
- Bluructions in Dynamical Systems With Internal Resonance (78-WA/APM-12) (A) **My 104**
- Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**
- Clamped Beam Parametric Amplifier (79-APM-9) (A) **S 106**
- A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) (A) **Je 93**
- Comparative Analysis by the Displacement-Discontinuity Method of Two Energy Criteria of Fracture (79-APM-25) (A) **S 107**
- Construction of Nonlinear Monotonic Functions With Selectable Intervals of Almost Constant or Linear Behavior (78-WA/APM-22) (A) **My 104**
- Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 102**
- Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) (A) **S 107**
- Dynamic Buckling of a Damped Externally Pressurized Imperfect Cylindrical Shell (79-APM-21) (A) **S 107**
- Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) (A) **My 105**
- Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**
- Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) (A) **D 105**; Part 2: Experiments (79-APM-4) (A) **S 105**
- The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) (A) **S 107**
- Elastic-Plastic Tension-Torsion in a Circular Bar of Rate-Sensitive Material (79-APM-22) (A) **S 107**
- An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**
- Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**; Part 2: Incompressible Materials (79-APM-6) (A) **S 106**
- Finite Extension of an Elastic Strand With a Central Core (78-WA/APM-7) (A) **My 103**
- On the Hardening Response in Small Deformation of Metals (78-WA/APM-17) (A) **My 104**
- Harmonic Holes for Nonconstant Fields (79-APM-30) (A) **S 106**
- Harmonic Waves in Layered Composites: New Bounds on Eigenfrequencies (78-WA/APM-23) (A) **My 105**
- The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) (A) **S 108**
- The Interface Crack in a Combined Tension-Compression and Shear Field (79-APM-23) (A) **S 107**
- An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) (A) **S 105**
- Lateral Dynamics and Stability of the Skateboard (79-APM-14) (A) **S 106**
- Measurement of the Elastic-Plastic Boundary Around Cold-worked Fastener Holes (78-WA/APM-2) (A) **My 103**
- Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) (A) **S 105**
- Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**
- Natural Frequencies of Clamped Orthotropic Rectangular Plates With Varying Thickness (78-WA/APM-9) (A) **My 104**
- A New Cumulative Damage Model—Part 3 (78-WA/APM-19) (A) **My 104**
- The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) (A) **S 106**
- Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**
- Nonparallel Effects on the Stability of Jet Flow (78-WA/APM-16) (A) **My 104**
- On the Onset of Breakup in Inviscid and Viscous Jets (79-APM-7) (A) **S 106**
- Postbuckling Analysis of Continuous, Elastic Systems Under Multiple Loads—Part 1: Theory (79-APM-16) (A) **S 107**; Part 2: Applications (79-APM-17) (A) **S 107**
- A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**
- Roots of Lambda Matrices (78-WA/APM-4) (A) **My 102**
- A Simplified Stability Criterion for Nonconservation Systems (79-APM-19) (A) **S 107**
- Simulation of the Influence of Bonding Materials on the Dynamic Behavior of Laminated Composites

(78-WA/APM-15) (A) **My 104**  
The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (78-APM-32) (A) **S 108**  
On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) (A) **Je 93**  
Stability of Liquid-Filled Spinning Spheroids Via Liapunov's Second Method (78-APM-12) (A) **S 106**  
The Stability of a Moving Elastic Strip Subjected to Random Parametric Excitation (79-APM-10) (A) **S 106**  
Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (78-APM-27) (A) **S 108**  
Stationary Response of a Randomly Parametric Excited Nonlinear System (78-WA/APM-13) (A) **My 103**  
A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) (A) **S 106**  
Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104**  
Stress in Glass Fibers Induced by the Draw Force (78-WA/APM-21) (A) **My 104**  
Stress Singularity at the Corner of a Wedge-Shaped Crack or Inclusion (78-WA/APM-6) (A) **My 103**  
A Theory of Viscoelastic Analogy for Wave Propagation Normal to the Layering of a Layered Medium (79-APM-24) (A) **S 107**  
Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**  
Wide-Band Random Axisymmetric Vibration of Cylindrical Shells (79-APM-13) (A) **S 106**  
**Applied Scientists**  
Encyclopedic Dictionary of Mathematics for Engineers and Applied Scientists (CB) **Ap 104**  
**Appraisal Program**  
Employee Performance Appraisal **Ji 32**  
**Aquatic Animal Studies**  
Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAs-45) (A) **O 90**  
**Araujo, P. M. S.** Laminar Heat Transfer in Porous Ducts with Variable Suction (78-WA/HT-41) (A) **Mr 96**  
**Arbitrary Two-Dimensional Surfaces**  
An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) (A) **Ja 93**  
**Architectural Salesmanship**  
Architectural and Engineering Salesmanship (CB) **Je 104**  
**Arctic Gas Service**  
New Cast Steel Alloys Readied for Arctic Gas Service (BTR) **S 60**  
**Arctic Survival**  
Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**  
**Ariman, T.** A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **My 96**  
**Armaly, B. F.** Radiative Transfer through an Isotropically Scattering Finite Medium with Reflecting Boundaries (79-HT-29) (A) **O 93**  
**Armor-Piercing Projectiles**  
Transparent Ceramic Armor (BTR) **My 52**  
**Armistead, H. (author)** Geothermal Energy: Its Past, Present and Future Contributions to the Energy Needs of Man (CB) **Ji 106**  
**Armas, O. A.** Heat Transfer for Laminar, Uniform Heat Generating Fluid Flow in a Curved Pipe (79-HT-93) (A) **N 107**  
**Araki, Y.** On a New Type of Vibrating Lift (79-DET-23) (A) **N 111**  
**Arnold, J. M.** Effect of Cell Size on Natural Convection in High L/D Tilted Rectangular Cells Heated and Cooled on Opposite Faces (78-WA/HT-5) (A) **Mr 93**  
**Aroesty, J.** Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) (A) **S 105**  
**Aronofsky, J. (editor)** Energy Policy (CB) **Ji 106**  
**Arsenic**  
Of Arsenic and Old Mace (BTR) **O 48**  
**Artificial Human Leg**  
Artificial Leg With Natural Gait (BTR) **Ja 58**  
**Artificial Reels**  
Artificial Reels (ES) **Ap 20**  
**Artificial Upwelling**  
The Production of Food, Energy and Fresh Water from the Sea through Artificial Upwelling (79-Sci-19) (A) **Ag 94**  
**Asaeda, M.** Mechanism of Freeze-Drying of Porous Bodies by Conductive Heat Transfer (79-HT-86) (A) **N 106**

**Asbill, W. T.** Subsea Chamber Design for the Dry Containment of Wellhead Equipment (78-Pet-43) (A) **F 125**  
**Asismic Building Isolation Systems**  
Asismic Building Isolation Systems: Better Protection Against Earthquake Damage (79-PVP-54) (A) **S 96**  
**Ash Characteristics**  
Development of Method for Determining Emisivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**  
**Ash Deposition**  
Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**  
**Ashland, M.** Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Ja 89**  
**Ashraf Mahtab, M.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 126**  
**Aspect Ratios**  
Heat Transfer in Air Enclosures of Aspect Ratio Less Than One (78-WA/HT-7) (A) **Mr 93**  
**Assembly Automation**  
Discrete Parts Assembly Automation—An Overview (78-WA/DSC-11) (A) **Ap 94**  
**Assembly Method**  
A Survey of Economic Analysis for Programmable Assembly (78-WA/DSC-17) (A) **Ap 95**  
**Assessment Measures**  
Are You Creative? (PS) **Ji 72**  
**Assist Devices**  
Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**  
**Assurance Technologies**  
Assurance Technologies and the Bottom Line (NR) **Mr 61**  
**Astronaut Candidates**  
"We're Looking for People Who Like to Fly" (NB) **O 80**  
**Astronauts**  
Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**  
**Astronomical Observatory**  
Astronomical Observatory Dome Bearing Design (78-WA/DE-19) (A) **Mr 86**  
**Astronomical Satellite**  
Design of a One-Year Lifetime, Spaceborne Superfluid Helium Dewar (79-ENAs-23) (A) **O 88**  
**Asymmetric Boundary Layers**  
Asymmetric Boundary Layer on a Nonisothermally Heated Cone (79-HT-108) (A) **N 108**  
**Asymmetric Shaft Stiffness**  
Response Analysis of a General Asymmetric Rotor-Bearing System (79-DET-84) (A) **N 117**  
**Atam, M. K.** Heat Transfer for Laminar, Uniform Heat Generating Fluid Flow in a Curved Pipe (79-HT-93) (A) **N 107**  
**Atassi, H.** Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Ji 96**; Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Ji 97**  
**Atkinson, M.** An Approximate Explicit Solution for Polar Strain of Hydraulically Bulged Circular Diaphragms (79-DET-111) (A) **O 106**  
**Aturi, S. M.** Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**; Part 2: Incompressible Materials (79-APM-6) (A) **S 108**; Influences of Flaw Shapes on Stress Intensity Factors for Pressure Vessel Surface Flaws and Nozzle Corner Cracks (79-PVP-65) (A) **O 96**  
**Atmospheric Changes**  
Blowing the Whistle on Universal Dangers (BTR) **D 55**  
**Atmospheric Gases**  
The Earth Burps Methane... (BTR) **Ji 41**  
**Atmospheric Pressure**  
The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**  
**Atolls**  
Ultimate Wave Machine (BTR) **Ag 44**  
**Atomic Energy**  
Texans Back Fusion (ES) **O 19**

**Atomization Parameters**  
Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**  
**Attia, M. H.** Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**; Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**  
**Attic Heat Loss**  
Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**  
**Atz, R. W.** High Temperature Testing of a Sodium Pump (78-WA/NE-12) (A) **Mr 89**  
**Au, Y. H. J.** The Lancaster Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) (A) **Mr 94**  
**Audibert, J. M. E.** Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**  
**Auditing**  
Auditing an Engineering Organization **S 22**; (78-WA/Mgt-7) (A) **Je 91**  
**Auer, P. (author)** Advances in Energy Systems and Technology (CB) **Ji 106**  
**Aumen, C. P.** A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 96**  
**Auslander, D. M.** Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 96**; An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 96**; A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**  
**Austenitic Alloys**  
Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Ji 97**  
**Austin, L. G.** The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**  
**Auto Lock**  
Jimmy-Proof Auto Lock (BTR) **Ji 44**  
**Auto Turbine**  
Cheers for October (C) **D 54**  
Hopes for the Auto Turbine (ES) **O 18**  
**Automated Bagging Machine**  
Automated Bagging Machine (IF) **Ji 54**  
**Automated Control Systems**  
Automated Highway (BTR) **O 45**  
Automated Process Control Systems: Concepts and Hardware (CB) **My 107**  
**Automated Design**  
Application of Automated Design to Piping Systems: Routing and Support Location (79-PVP-44) (A) **Ag 107**  
**Automated Drill Production**  
A Microprocessor Controlled Twist Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**  
**Automated Guideway Transit Vehicles**  
Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**  
Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) (A) **Ap 94**  
**Automated Inspection**  
Automated Inspection of Wire-Frame Assemblies (BTR) **Ji 43**  
**Automated Machines**  
Higher Efficiency Transfer Line Machines (BTR) **Ja 43**  
**Automated Process Planning**  
An Analysis of Some Production Planning Practices (78-WA/Prod-13) (A) **Mr 90**  
**Automated Production System**  
A Case Study in Technology Transfer (78-DET-81) (A) **Ja 89**  
**Automated Welding Assembly**  
Mammoth Automated Welding Assembly (BTR) **D 57**  
**Automatic Focusing System**  
Camera Focus via Ultrasonic Echo Ranging (BTR) **Ja 44**  
**Automatic Hot Forging**  
Automatic Hot Forging for Parts Production (BTR) **N 66**  
**Automobile Gas Turbines**  
Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Au-

tomobile Gas Turbine—Part 1 (79-GT-127) (A) **Ag 100**

**Automobiles**  
The Hybrid Car (ES) **Ji 20**  
The "PXL"—Car of the 80s in Detroit (BTR) **Je 48**

**Automotive Applications**  
Analysis of Dynamically Loaded Floating-Ring Bearings for Automotive Applications (79-Lub-14) (A) **D 103**

**Automotive Computer**  
Automotive Computer (BTR) **F 57**

**Automated Engines**  
Computer-Perfect Engines (BTR) **Je 54**

**Automated Systems**  
The Future of Numerical Controls **S 27**

**Automotive Connecting-Rod**  
Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Je 94**

**Automotive Emission-Constrained Fuel Problem**  
Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Drivability Constraint (78-WA/DSC-25) (A) **Ap 95**

**Automotive Exhaust**  
Catalytic Converter Research (EN) **Ji 67**

**Automotive Fuel**  
Hydrogen as an Automotive Fuel (BTR) **Je 52; (C) Ag 43**

**Automotive Gas Turbine**  
An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Ji 94**  
A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ji 94**

**Automotive Hand Controls**  
The Performance of Automotive Hand Controls (78-WA/DSC-38) (A) **Ap 99**

**Auxiliary Branch Piping**  
Criteria and Associated Dynamic Elastic Plastic Analysis of Auxiliary Branch Piping for a Large LOCA (79-PVP-26) (A) **Ag 106**

**Auxiliary Electric Power**  
A Growing Market (ES) **Ag 19**

**Auxiliary Piping Systems**  
A Rebuttal (ES) **Je 18**

**Auxiliary Power Unit**  
Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit (78-WA/GT-2) (A) **Ap 88**

**Availability**  
The "Second Generation" LM2500—An Example of High Level of Reliability/Availability with Low Life-Cycle Costs (79-GT-79) (A) **Ag 98**

**Aviation Turbine Engines**  
High-Freezing-Point Fuels Used for Aviation Turbine Engines (79-GT-141) (A) **Ag 100**

**Avionics**  
Development and Characterization of an Evaporation Cold Plate for Thermal Control of Avionic Equipment (79-ENAs-4) (A) **O 86**  
Future Requirements for Environmental Control Systems in Naval Aircraft (79-ENAs-9) (A) **O 87**  
Thermal Control Systems for Pod-Mounted Avionics (79-ENAs-2) (A) **O 86**

**Awards**  
ASME Petroleum Division Awards Eight Scholarships (EN) **Je 61**  
An Award for Acoustic Flowmeters (ES) **O 18**  
An Award of Honor (ES) **S 21**  
Award-Winning Factory-Produced Building (BTR) **S 56**  
Conservationist Award (ES) **F 24**  
EJC Cities Neil Armstrong (NB) **Je 67**  
LSU Wins National Sea Grant College Status (EN) **Ap 66**  
New Bioengineering Award **My 82**  
Please Note... (C) **O 41**  
\$15,000 Prize Established in Bioengineering (EN) **Ji 68**  
Ten Designers Cited for Energy-Efficient Buildings (NFR) **F 66**

**Awards Nominations**  
Nominees Sought for PVP Codes Award **Je 82**

**Axial Airflows**  
Atomization of Water Jets and Sheets in Axial and Swirling Airflows (79-GT-170) (A) **Ji 102**

**Axial Blade Optimization**  
A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**

**Axial Compressor**  
The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Ji 96**

**Axial Compressor Cascades**  
Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ji 98**

**Axial Compressor Rotors**  
Forced Vibrations of a Single Stage Axial Compressor Rotor (79-GT-108) (A) **Ag 100**

**Axial Compressors**  
Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) (A) **Ap 89**

**Axial Flow**  
Blade-Row Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Ji 96**

**Axial Flow Compressors**  
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 98**  
Experimental and Analytical Investigation of the Effects of Reynolds Number and Blade Surface Roughness on Multistage Axial Flow Compressors (79-GT-2) (A) **Ag 97**  
Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**  
The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ji 103**  
Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ji 98**  
Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Ji 91**

**Axial Flow Fan**  
Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Je 100**

**Axial-Flow Turbine**  
Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.77-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Ji 91**

**Axial Hydraulic Transmission**  
Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**

**Axial Loading**  
A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**

**Axial Tension**  
Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104**

**Axial Thrust**  
Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

**Axial Torque**  
The Dynamics of Rotor-Bearing Systems with Axial Torque—A Finite Element Approach (79-DET-68) (A) **N 115**

**Axiallysymmetric Bending**  
Axiallysymmetric Bending of Annular Plates (78-WA/APM-27) (A) **Je 93**

**Axiallysymmetric Surfaces**  
Diffuse-Specular Analysis of Axiallysymmetric Surfaces with Application to the Design of Parabolic Reflectors (79-HT-22) (A) **O 93**

**Axiallysymmetrically Confined Axial Flow**  
Dynamics of Flexible Cylinders in Axiallysymmetrically Confined Axial Flow (78-WA/APM-24) (A) **My 105**

**Axtman, W. H.** Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC/Fu-3) (A) **Je 91**

**Ayers, Jim** Sharing the Dream (C) **N 55**

**Ayoub, A. J.** Vibration of Nuclear Power Plant Primary Coolant System Piping During Normal Operation (79-DET-28) (A) **N 111**

**Azar, J. J.** A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**

**Azuhata, S.** NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**

## B

**Bazzaari, Z.** An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Je 86**

**Bace, B. W.** Codes, Accolades, Corrections (C) **Ap 45**

**Bacher, R. E.** Seismic-Evaluation of Piping and Supports at Diablo Canyon Site Units 1 and 2, for the Postulated

Hogri Earthquake (79-PVP-100) (A) **S 102**

**Bachus, C. E.** An Overview of Photovoltaic Power Systems (79-Sol-12) (A) **Ag 93**

**Bacteria**  
Heat Transfer and the Killing of Bacteria in Thermal Sterilization of Meat Roll (78-WA/HT-56) (A) **Mr 97**

**Badgley, R. H.** An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Ji 101**

**Badland, M. L.** On a Numerical Method for Solution of the Mathieu-Hill Type Equations (79-DET-22) (A) **N 111**

**Beggi, C.** Computer-Aided Fatigue Design of Power Transmission Shafts with Strength Constraints Using a Finite Line Element Technique and a Proposed Fatigue Failure Criterion (79-DET-103) (A) **D 106**; Critical Operating Speeds of Constrained Space Linkages Using Spatial Finite Line Element Method and Lumped Mass Systems (79-DET-37) (A) **N 112**

**Bagging Machine**  
Automated Bagging Machine (IF) **Ji 54**

**Bailey, D. A.** Study of Mean- and Turbulent-Velocity Fields in a large-Scale Turbine-Vane Passage (79-GT-33) (A) **Je 100**

**Bailey, J. R.** Noise Reduction on Textile Ring-Spinning Frames (79-DET-33) (A) **N 112**

**Bailey, J. T.** Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) (A) **Mr 85**

**Bain, L. J.** Application of Impact Damping to Rotary Printing Equipment (79-DET-82) (A) **N 116**

**Baines, T. M.** Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project (78-DGP-29) (A) **Je 80**

**Bair, S.** Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Je 94**; Some Observations on the Relationship Between Lubricant Mechanical and Dielectric Transitions Under Pressure (79-Lub-16) (A) **D 103**

**Bajaj, A. K.** Bifurcations in Dynamical Systems With Internal Resonance (78-WA/APM-12) (A) **My 104**

**Baker, C. B.** Eddy Viscosity Calculations of Turbulent Buoyant Plumes (79-HT-51) (A) **N 103**

**Baker, C. R.** Dynamic Analysis of a Prototype Wheel Balancer (79-DET-72) (A) **N 116**

**Baker, L., Jr.** Heat Transfer from Heat Generating Molten UO<sub>2</sub>: Interpretations of the Available Experimental Data (79-HT-115) (A) **N 108**; Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**

**Baker, P. H.** Progress in Railway Mechanical Engineering—1977-1978 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**

**Baker, G. R.** Management of the Product Liability Engineer (78-WA/Mgt-4) (A) **Je 90**

**Baker, P. H.** Survey Committee Report on Railway Engineering Progress — Locomotives **Ji 35**

**Baker, R. L.** Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Tex-1) (A) **Je 92**; Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Je 93**

**Bakay, T.** Economic Benefits and Economic Impact of Interactive Computer-Aided Design (79-PVP-80) (A) **S 100**

**Bakker-Arkema, F. W.** Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products (78-WA/HT-54) (A) **Mr 97**

**Balancing Rotating Shafts**  
An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Ji 101**

**Balancing Techniques**  
Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) (A) **Mr 85**

**Baldur, R.** The Effect of Corner Radius on Plate-Cylinder Intersections (79-PVP-15) (A) **Ag 104**

**Baldwin, R. M.** Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Je 86**

**Ball Bearing Analysis**  
Dynamics of Rolling-Element Bearings Part III: Ball Bearing Analysis (78-Lub-32) (A) **Je 96**

**Ball Bearing Life**  
Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) (A) **Je 96**

**Ball Bearing Results**  
Dynamics of Rolling Element Bearing Part IV: Ball Bearing Results (78-Lub-33) (A) **Je 96**

**Ball Bearing Vibrations**  
An Analytic Model for Ball Bearing Vibrations to Predict



Vibration Response to Distributed Defects (79-DET-87) (A) D 104

#### Ball Bearings

Ceramics in Rolling Element Bearings (79-GT-58) (A) JI 83

Elastic Deformation of Ball Bearings, Gears, and Cams (BTR) JI 42

An Investigation of the Early Detection of Defects in Ball Bearings by the Vibration Monitoring (79-DET-45) (A) N 113

Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) (A) Ja 96

Ballal, D. R. Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) JI 100

#### Ballistics Systems

The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) Ja 93

Balmer, M. E. Scale Model Impact Tests of Hazardous Material Container Designed to Section VIII, Division 1, of the ASME Code (79-PVP-42) (A) Ag 106

Balkley, K. R. Criteria and Associated Dynamic Elastic Plastic Analysis of Auxiliary Branch Piping for a Large LOCA (79-PVP-26) (A) Ag 106

Bambrough, H. A. Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) Ja 97

Bamford, W. H. Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analysis of Nuclear Reactor Vessels (79-PVP-116) (A) S 103

Bamert, K. The Behavior of a Closed-Cycle Gas Turbine with Time Dependent Operating Conditions (79-GT/Int-2) (A) O 83; The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) JI 98; Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) JI 93; Matching of Turbocomponents Described by the Examples of Impeller and Diffuser in a Centrifugal Compressor (79-GT/Int-9) (A) O 82; Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) JI 98; Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) JI 98

Bandow, H. E. Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) Ja 93

Bandyopadhyay, P. A Fibre-Optic Laser-Doppler Probe for Vibration Analysis of Rotating Machines (79-GT/Int-11) (A) O 83

Banerjee, B. N. Experimental Studies on Thermoelastic Effect, in Hydrodynamically Lubricated Flat Seals (78-Lub-11) (A) Ja 94

Banerjee, J. K. Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part 1: A Wheel Wear Mechanism (78-WA/Prod-29) (A) My 101

Bannister, R. H. Methods for Modelling Flanged and Curvic Couplings for Dynamic Analysis of Complex Rotor Constructions (79-DET-65) (A) N 114

Bao, H. Application of Dynamic Programming to Optimize Tool Replacement Schedules for Multi-Tool Operations Involving Distributed Tool Lives (79-DET-4) (A) N 109

Bapu Rao, M. N. Finite Element Analysis of Mindlin Plates (78-WA/DE-6) (A) Mr 85

Bar-Cohen, Avram. Experimental Investigation of Transient Asymmetric Heating in Vertical and Inclined Rectangular Enclosure (79-HT-90) (A) N 106

Barash, M. M. Analysis of Operating Rules in a Computerized Manufacturing System (78-WA/Prod-38) (A) My 102; The Future of Numerical Controls S 27; Speculations on the Future of Numerical Controls (78-WA/DSC-9) (A) Ap 94

Barber, R. E. Solar Rankine Engines—Examples and Projected Costs (79-Sol-3) (A) Ag 92

Barbera, P. J. Development of an Improved Sabatier Reactor (79-ENAs-36) (A) O 89

Barbieri, R. H. The Solar Potential for Process Heat: A Commercialization Perspective (79-Sol-24) (A) Ag 95

Barbosa, J. R. Alcohol's Promise (C) F 55

Barbrow, L. E. Dimensional Integrity (C) JI 39

Barge Transportation  
Rail-to-Barge Transportation of Coal (78-WA/MH-6) My 98

Barkan, P. A New Rapid-Response Hydraulic Actuator-Design, Analysis and Test Results (79-CE-3) (A) Ag 101

Barker, C. D. Can Nozzle Design be Effectively Improved

for Drilling Purposes (78-Pet-51) (A) F 125

Barker, S. J. Turbulence Management in a High-Speed Boundary Layer Facility (79-FE-7) (A) O 85

Barmada, R. Internal-External Load-Displacement Characteristics of the In-Vitro Human Ankle Joint (79-Bio-3) (A) S 108; Relative Motion of the Tibia with Respect to the Foot During Internal-External Rotation of a Human Ankle (79-Bio-4) (A) S 108

Barnaby, R. S. Making Aviation History (C) Mr 44

Barnes, R. H. Those Treacherous Continuous Pilots (78-Pet-45) (A) F 124

Barnett, A. M. Low-Cost Thin-Film CdS-Based Solar Cells: Progress and Promise (79-Sol-15) (A) Ag 94

Barone, M. R. The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Met-6) (A) Mr 90

Barrachin, B. Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) S 98

Barras, R. (author) Scientists Must Write: A Guide to Better Writing for Scientists, Engineers and Students (CB) N 118

Barrett, L. E. Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) N 115; A Finite Length Bearing Correction Factor for Short Bearing Theory (79-Lub-13) (A) D 103

Barrett, R. E. Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) Ja 97

#### Barrier Strip

Metallic Thermal Seal (BTR) JI 45

Barth, H. Piston Motion Influences, Measurements (78-DGP-17) (A) Ja 87

Barthelemy, R. Heat Pipe Mirrors for High-Power Lasers My 34

Barlok, W. Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) Ap 103

Bartzis, J. G. Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) (A) O 94

Basavanthappa, N. Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) My 98

#### Base Isolation

Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) S 97

An Introduction to Base Isolation (79-PVP-69) (A) S 98

Base Isolation System  
Toward the Rational Selection of Base Isolation Systems (79-PVP-53) (A) S 97

#### Base Pressure Problem

The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) JI 98

#### Baseplate Design

An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) S 97

Basham, S. J. Jr. Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) (A) Mr 87

#### Basic Design Concepts

Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers with Position Feedback (78-WA/DSC-3) (A) Ap 93

Bass, B. R. Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) F 131

Beal, E. A. Women: A Growing Force in Engineering (C) D 52

Basu, R. S. Viscosity of Nitrogen Near the Critical Point (78-WA/HT-36) (A) Ap 91

Batton, C. F. The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) Ag 94

#### Battery-Powered Vehicles

LILCO Pushes Electric Vehicles (NR) F 67

#### Batteries

Small, Long-Lived Thermal Battery (BTR) O 44

#### Battery System

System May Speed Growth of Solar Energy Storage (BTR) Ja 55

Battista, R. A. Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) JI 102

Baudat, N. P. Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) JI 101

Baughn, J. W. Isothermal Heat Flux Sensor (78-WA/HT-14) (A) Mr 94; Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) Mr 94

Baxter, A. Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) JI 97

#### Bay Area Rapid Transit

"Close Headway" Operation for Bay Area Rapid Transit (BART) (79-RT-6) (A) Ag 97

Bay, M. Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) My 98

Bayazitoglu, Y. Onset of Convection in Fluid Layers with Nonuniform Volumetric Energy Sources (79-HT-100) (A) N 107

Bea, G. Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) F 123

Beckwith, W. F. A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) Ja 92

#### Beaded Skin Panel

Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) Ap 100

#### Beam Segments

Vibration Analysis of Turbomachinery Blades Using Dedicated Discretization and Twisted Beam Theory (79-DET-85) (A) N 117

#### Beam Supports

Loads Moving on Beam Supported by Layered Elastic Foundation (79-DET-15) (A) N 110

#### Beam Type Piping Supports

SUPAN—A Computer Program for the Analysis of Beam Type Piping Supports (79-PVP-19) (A) Ag 104

#### Beams

Clamped Beam Parametric Amplifier (79-APM-9) (A) S 106

Dynamic Analysis of Cantilever Beams (79-PVP-78) (A) S 99

Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) (A) S 105; Part 2: Experiments (79-APM-4) (A) S 105

Inelastic Bending of Beams under Time-Varying Moments—A State Variable Approach (79-PVP-82) (A) S 100

Laser-Particle Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) JI 102

Local Flexibility Coefficients for the Built-In Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) S 96

#### Miniature Velocimeter (BTR) JI 50

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) My 98

The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) (A) S 106

Plasma Laser Tunable Over Wide Frequency Range (BTR) F 60

A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) My 98

A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) (A) S 106

A Technical Theory of Dynamical Torsion for Beams of any Cross-Section Shapes (79-DET-59) (A) N 114

Bean, C. J. The Development of the Olympus "C" Gas Generator (79-GT-122) (A) JI 97

Beane, E. W. Relationships for Nozzle Performance Coefficients (79-GT-145) (A) JI 101

Beard, J. N., Jr. A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) Ja 92

Beards, C. F. The Control of Structural Vibration by Frictional Damping in Electro Discharge Machined Joints (79-DET-79) (A) N 116

#### Bearing Defects

Identification of Bearing Defects by Spectral Analysis (79-DET-14) (A) N 110

#### Bearing Flexibility

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) Ja 93

#### Bearing Oil-Film

Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) Ap 94

#### Bearing Supports

Elastomer Mounted Rotors—An Alternative for Smoother



Running Turbomachinery (79-GT-149) (A) **J1 100**

**Bearings**

Active Magnetic Bearings (BTR) **F 58**

Ceramics in Rolling Element Bearings (79-GT-68) (A) **J1 93**

Dynamics of Rolling-Element Bearings Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) (A) **Ja 95**, Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) **Ja 96**, Part III: Ball Bearing Analysis **Ja 96**, Part IV: Ball Bearing Results (78-Lub-33) (A) **Ja 96**

The Dynamics of Rotor-Bearing Systems with Axial Torque—A Finite Element Approach (79-DET-68) (A) **N 115**

Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) **N 115**

Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **J1 95**

Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) (A) **Ja 96**

A Finite Length Bearing Correction Factor for Short Bearing Theory (79-Lub-13) (A) **D 103**

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**

Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (78-Lub-30) (A) **Ja 96**

A Generalized Short Bearing Theory (79-Lub-20) (A) **D 103**

Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) (A) **Ja 96**

A New Method for Etching Surfaces of Bearings and Other Machine Elements (79-Lub-9) (A) **D 103**

Optical Analysis of Porous Metal Bearings (78-Lub-29) (A) **Ja 96**

An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**

Stability Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (79-DET-63) (A) **N 113**

**Bearings Design**

The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**

Beck, E. J. Si Simplifies Life (C) **Ag 42**

**Beck's Second Method**

Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**

Becker, S. J. Metric Second? Just a Second! (C) **N 55**

**Beef**

Determination of Specific Heat of Meat (78-WA/HT-57) (A) **Mr 97**

Beer, J. M. Elections to Fellow Grade **Ja 94**

Beese, J. G. Behaviour of Metallic Safety Rupture Diaphragms Containing Imperfections (79-DET-107) (A) **D 106**

Beessing, M. E. Textile Drying Using Solar Process Steam (79-Sol-23) (A) **Ag 95**

Beggs, H. D. Predicting Temperatures in Flowing Oil Wells (79-Pet-9) (A) **Ja 97**, Selection and Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-8) (A) **Ja 97**

**Behavior Analysis**

Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) (A) **S 96**

**Behavior Measurement**

Are You Creative? (PS) **J1 72**

**Behavioral Mystery**

The Complexity of Mind: Magic, No, Mystery, Yes (BTR) **S 51**

Behery, H. M. Fiber Migration and Characteristics in Open-End Spun Cotton-Rich Blended Yarn (79-Tex-7) (A) **D 100**

Behnia, M. Mixed Layer Growth and Heat Transfer in a Stratified Fluid Heated from Below (79-HT-107) (A) **N 108**

Belm, A. R. Bursting Experiment of a High Pressure Multilayer Test Vessel (79-PVP-96) (A) **S 101**

Belzer, B. OPEC—Meet UTEC! (C) **J1 40**

Bjerklie, J. W. Demonstration of Fuel Conservation in High Temperature Industrial Furnaces (78-WA/Enr-8) (A) **Ja 92**

Bell, J. Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Ja 100**

Bell, K. J. Local Heat Transfer Measurements in and Downstream from a U-Bend (79-HT-82) (A) **N 105**

**Belt Conveyors**

Coal Transportation: Belt Conveyors, Combined Rail-Barge,

and Slurry Pipelines (78-WA/MH-1) (A) **My 97**

Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**

Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MH-7) (A) **My 98**

**Beltting**

High-Tension Straightwarp Conveyor Beltting (BTR) **My 54**

**Belts**

Durable, Nonslip, Stainless-Steel Drivebelts (BTR) **J1 48**

**Bending**

Axisymmetric Bending of Annular Plates (78-WA/APM-27) (A) **Ja 93**

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**

A Probabilistic Model of Size Effect in the Fatigue Strength of Rounds in Bending and Torsion (79-DE-16) (A) **Ag 103**

Science of the Big Bend (BTR) **J1 46**

**Bending Stiffness**

The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**

**Bending Stress**

Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104**

Benedict, R. P. Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) (A) **Mr 90**, Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) (A) **Mr 92**

Bennet, W. A. The Time-Variant Aerodynamic Response of a Stator Row Including the Effects of Airfoil Camber (79-GT-110) (A) **Ag 99**

Bennett, B. A. Why Registration? (C) **Ag 42**

Bennett, I. S. Support the Auxiliary! (C) **Ja 44**

Benton, M. The Application of the Ritz Averaging Method to Determining the Response of Systems with Time Varying Stiffness to Harmonic Excitation (79-DET-20) (A) **N 110**, Normal Mode Uncoupling of Systems With Time Varying Stiffness (79-DET-19) (A) **N 110**

Ber, A. On the Mechanism of Chip Breaking (78-WA/Prod-21) (A) **My 100**

Berchowitz, D. M. A Numerical Model for Stirling Cycle Machines (79-GT/Isr-16) (A) **O 84**

Berens, A. P. Design of a Crack Growth Based Structural Maintenance System (79-PVP-95) (A) **S 101**

Berger, S. A. Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) (A) **S 105**

Bergholz, R. F. Natural Convection of a Heat Generating Fluid in a Closed Cavity (78-WA/HT-6) (A) **Mr 93**

Bergles, A. E. Elections to Fellow Grade **My 89**

Bergmann, K. The Influence of Cylinder Cutoff on Fuel Consumption and Emissions of Diesel Engines (78-DGP-13) (A) **Ja 87**

Bernaerts, H. The Productivity Parameter (C) **Ja 40**

Berry, K. L. Conceptual Design of Combined In Situ and Surface Retorting of Oil Shale (79-PVP-72) (A) **S 99**

Berry, P. Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**

Bersach, G. F. Ceramics in Rolling Element Bearings (79-GT-68) (A) **J1 93**

Bert, C. W. Whirling Response and Stability of Flexibly Mounted, Ring-Type Flywheel Systems (79-DET-71) (A) **N 116**

Berthe, D. An Attempt to Provide a Unified Treatment of Tribology Through Load Carrying Capacity, Transport and Continuum Mechanics (79-Lub-18) (A) **D 103**

Bertrand, J. Distinctions Between Two Types of Self Excited Gas Oscillations in Vaned Radial Diffusers (79-GT-58) (A) **J1 92**

Bessier, W. F. Performance of Solar Assisted Heat Pump Heating Systems for Residential Use (79-HT-12) (A) **N 102**

Beuther, P. D. Momentum and Temperature Balance Measurements in an Axisymmetric Turbulent Plume (79-HT-42) (A) **O 94**

**Bevel Gears**

Calculation of the Geometric Factor Using the Plate Formula for Forged Bevel Gears with a Back Shoulder (79-DE-14) (A) **Ag 102**

Development of a Design Procedure for Forged Bevel Gears with a Web (79-DE-13) (A) **Ag 102**

Bexon, M. J. The LRC Coach Trucks and Suspension (79-RT-4) (A) **Ag 96**

Boyes, J. Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**

Bhandari, S. K. Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**

Bhaskaran, P. Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Ja 89**, Velocity Exponent for Erosion and Noise Due to Cavitation (79-FE-9) (A) **O 85**

Bhalla, S. M. Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 99**

Bhushan, B. New Design Concepts in Safety of Tractor Trailers (78-DET-83) (A) **Ja 90**, Stick-Slip Induced Noise Generation in Water-Lubricated Compliant Rubber Bearings (79-Lub-21) (A) **D 104**

Bierman, S. L. (author) Geothermal Energy in the Western United States: Innovation Versus Monopoly (CB) **F 134**

Bigley, W. J. Resonance Equalization in Feedback Control Systems (78-WA/DSC-24) (A) **Ag 98**

Bilgen, E. On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Ja 95**

Bill, R. C. Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) (A) **Ag 89**

Billhardt, C. F. Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Ja 90**

Bindon, J. P. Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-117) (A) **Ja 99**, The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Ja 99**

**Binary Cycle Geothermal Power Plant**

Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Enr-2) (A) **Ja 92**

**Bingham Plastic Flow**

A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**

**Biodigestion**

Fuel Gas from Biodigestion (BTR) **N 82**

**Bioenergy**

Bio-Energy Research Grants (ES) **S 21**

Bioenergy—The Sky's the Limit (IF) **J1 55**

**Bioengineering**

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**

Clinical Implications of Pressure-Deformation Analysis of the Aortic Arch with Local Variations in the Elastic Property (79-Bio-5) (A) **S 100**

Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) (A) **Mr 91**

A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-12) (A) **Mr 91**

Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**

Functional Characterization of Canine Anterior Cruciate Ligaments (79-Bio-1) (A) **S 108**

In Vivo Constitutive Properties of the Passive Left Ventricular Myocardium (79-Bio-6) (A) **S 100**

Internal-External Load-Displacement Characteristics of the In-Vitro Human Ankle Joint (79-Bio-3) (A) **S 108**

Investigation of a Pulsatile Flowfield Downstream from a Model Stenosis (78-WA/Bio-6) (A) **Mr 91**

Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**

Modelling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**

\$15,000 Prize Established in Bioengineering (EN) **J1 68**

Relative Motion of the Tibia with Respect to the Foot During Internal-External Rotation of a Human Ankle (79-Bio-4) (A) **S 108**

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) (A) **Mr 91**

**Bioethics**

"Bioethicsline" (EN) **D 78**

**Biokinematics**

Technology Transfer in Biokinematics of Human Spine (78-DET-88) (A) **Ja 90**

## Biological Tissues

Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monoactive Electrocoagulation (78-WA/HT-66) (A) **Ap 93**

## Biomass Wastes

Experimental Cultivation of Giant Kelp in Oceanic Environments (79-Sol-30) (A) **Ag 95**

Noncatalytic Conversion of Biomass to Gasoline (79-Sol-29) (A) **Ag 96**

Solar Production of Hydrogen Fuel (BTR) **Ja 45**

## Biomimetic Processes

Playing with Mother Nature (E5) **N 33**

## Biosensor Development

Automated Biomonitoring Application to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Biosensing for Watershed Management (79-ENAs-41) (A) **O 89**

Blech, S. F. Application of Viscous Analysis to the Design of Jet Exhaust Powered Lift Installations (79-GT/1sr-15) (A) **O 84**

## Bismuth

Bismuth Magnetostrictive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **My 92**

## Bit Bearings

Preheat Temperature for Vacuum Dewatering of Sealed Bit Bearing Prior to Greasing (78-Pet-38) (A) **F 124**

Blaby, A. M., Sr. ME Rekindles Fond Memories (C) **D 54**

Bjorkman, G. S. Harmonic Holes for Nonconstant Fields (79-APM-30) (A) **S 108**

Black, J. T. Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**

## Black Hole

Unusual Satellite Data—A Black Hole? (BTR) **Je 50**

## Black Mechanical Engineers

The Black ME at Tuskegee Institute **My 38**

## Blade Geometry

Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Je 99**

## Blade Loading

Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Je 99**

## Blade Pack

Dynamic Analysis of Rotating Asymmetric Cross-Section Blade Pack (79-DET-93) (A) **D 105**

## Blade Passages

Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 88**

## Blade Row

Three-Dimensional Lifting-Surface Theory for an Annular Blade Row (79-GT-182) (A) **Ji 103**

## Blade-Row Interaction

Blade-Row Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Ji 96**

## Blade Row Performance

Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-18) (A) **Je 99**

## Blade Surface

Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-28) (A) **Ji 90**

## Blade Surface Roughness

Experimental and Analytical Investigation of the Effects of Reynolds Number and Blade Surface Roughness on Multistage Axial Flow Compressors (79-GT-2) (A) **Ag 97**

## Blade Wake

Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**

## Blade Wear

Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 90**

## Blade Vibration

Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**

## Blade-to-Blade Computation

Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 98**

## Blade-to-Blade Solution

A Blade-to-Blade Solution of the Flow in a Centrifugal Compressor Impeller with Splitters (79-GT/1sr-17) (A) **O 84**

## Bladed Disk

Vibration Characteristics of Asymmetric Cross-Section

Bladed Disk Under Rotation (79-DET-94) (A) **D 105**

## Blades

The Application of Component Mode Synthesis to Covered Groups of Blades (79-DET-92) (A) **D 104**

Coupled Vibrations of Blades in Bending-Bending-Torsion and Disk and Out-of-Plane Motion and In-Plane Motion (79-DET-90) (A) **D 104**

Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Ji 93**

A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Ji 103**

Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ji 98**

The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Je 99**

Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.77-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Ji 91**

An Experimental Study of Endwall and Airtail Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**

Fiber Reinforced Metals in Turbine Blades (79-GT/1sr-1) (A) **O 82**

Finite Element Analysis of Rotating Pretwisted Asymmetric Cross-Section Blades (79-DET-95) (A) **D 105**

Fundamental Mechanisms That Influence the Estimate of Heat Transfer to Gas Turbine Blades (79-HT-43) (A) **N 102**

Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**

Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Ji 104**

Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Ji 90**

Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ji 98**

A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**

Study of Mean- and Turbulent-Velocity Fields in a Large-Scale Turbine-Vane Passage (79-GT-33) (A) **Je 100**

Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**

Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Ji 93**

## Blading Surface Roughness

The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Ji 96**

Blair, J. L. Design and Development of a Trace Contaminant Removal Canister for Spacelab (79-ENAs-16) (A) **O 87**

Blair, M. F. An Experimental Investigation of Film Cooling on a Turbine Rotor Blade (79-GT-32) (A) **Ag 97**

An Experimental Study of Endwall and Airtail Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**

## Blanket Assembly

Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**

## Blanket Assembly Ducts

Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct (79-PVP-27) (A) **Ag 105**

## Blast Furnace Stockhouse

Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) (A) **My 97**

Blazowski, W. S. Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 100**

## Bleed Rate

Influence of Locking Velocity and Bleed Rate on Hydraulic Snubber Performance (79-PVP-39) (A) **Ag 106**

Blizard, J. R. Converters Catalyze Controversy. . . (C) **N 54**

Blondeau, R. Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Ja 98**

Bloomfield, H. S. Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Ji 91**

## Blowby Control

Progress in Understanding and Control of Ring Lubrication (78-DGP-25) (A) **Ja 89**

## Blowdown

Reactor Vessel Blowdown: Determination of Emergency Core Cooling Parameters (79-HT-83) (A) **N 105**

## Blowers

An Investigation of Regenerative Blowers and Pumps (78-WA/PD-2) (A) **My 94**

## Blowing Rate

The Film Cooling Effectiveness of Double Rows of Holes (79-GT/1sr-10) (A) **O 83**

## Bluff Bodies

Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Je 89**

Boast, G. K. Time Domain Analysis of Machinery Vibration Signals Using Digital Techniques (79-DET-13) (A) **N 110**

Boehm, R. F. Heat Transfer to an Evaporating Floating, N-Pentane Lens (79-HT-13) (A) **O 92**

Bogdanoff, J. L. A New Cumulative Damage Model—Part 3 (78-WA/APM-19) (A) **My 104**

Bohn, D. Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Ji 91**

## Boiler Design

Conversion of Industrial Plants to use Coal as Fuel **Ji 26**

## Boiler Furnaces

Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**

## Boiler Plants

Boiler Plant Accidents—Four Case Histories (78-Pet-46) (A) **F 125**

## Boilers

America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 94**

An Analytical and Experimental Investigation of a Rotating Boiler (79-HT-33) (A) **O 94**

Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Ji 90**

A Boiler Without Water Is . . . (78-Pet-19) (A) **Ja 98**

Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**

Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers (78-WA/APC-1) (A) **Ap 102**

Evaluation of Particulate Emissions from Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**

Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) (A) **My 96**

Industrial Application of a 66,000 lb/hr Vibrating Stoker Fired Boiler (78-IPC-Fu-4) (A) **Ja 91**

Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Ji 90**

Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**

An Order for Fluidized Bed (E5) **Je 18**

Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC/Fu-3) (A) **Ja 91**

Soot and the Combined Cycle Boiler (79-GT-67) (A) **Ji 93**

Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Je 97**

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**

Waste-Fueled Steam Boiler (IF) **D 66**

## Boiling Pools

Depressurization of Internally Heated Boiling Pools (79-HT-101) (A) **N 107**

Flow Dynamics of Volume-Heated Boiling Pools (79-HT-102) (A) **N 108**

Bollinger, J. C. Elections to Fellow Grade **Mr 80**

## Bond Graphs

Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**

Elements of a Bond Graph Simulation Language for Passive

- Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**
- Bondi, A. A.** Reliability as a Materials Property (78-WA/Mat-1) (A) **Mr 89**
- Bonding Materials**  
Simulation of the Influence of Bonding Materials on the Dynamic Behavior of Laminated Composites (78-WA/APM-15) (A) **My 104**
- Bonding Surfaces**  
Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **My 99**
- Bonding Systems**  
Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications (78-WA/GT-16) (A) **Ap 90**
- Bone Disease Research**  
Bone Disease Research Facility Opens (EN) **O 84**
- Book, W. J.** Analysis of Massless Elastic Chains with Servo Controlled Joints (78-WA/DSC-34) (A) **Ap 99**
- Booker, J. F.** Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**; Spherical Bearings: Static and Dynamic Analysis via the Finite Element Method (79-Lub-1) (A) **D 102**
- Booth, T. C.** An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Je 91**
- Boothe, W. A.** Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-198) (A) **Je 104**
- Borda Type Inlet**  
Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region (78-WA/HT-37) (A) **Mr 96**
- Boreholes**  
Failure of Inclined Boreholes (78-Pet-44) (A) **F 124**  
Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**
- Borest, A. P.** Elections to Fellow Grade **Ap 86**
- Boring Bar**  
Development of a Hydraulic Chambered, Actively Controlled Boring Bar (78-WA/Prod-20) (A) **My 100**
- Borio, R. W.** Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**; The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**
- Bornstein, B.** Consideration of Condenser Height in the Optimization of Power Plant Condensers (79-JPGC-Pwr-2) (A) **D 97**
- Bortz, S. A.** Screening Properties of Silicon-Based Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**
- Bosch Process**  
Bosch: An Alternate CO<sub>2</sub> Reduction Technology (79-ENAS-32) (A) **O 89**
- Bosman, C.** An Analysis of Three-Dimensional Flow in a Centrifugal Compressor Impeller (79-GT/Isr-13) (A) **O 83**
- Bostrom, T. E.** Comparison of Steam Hammer Dynamic Testing with Analysis for Main Steam Piping (79-PVP-22) (A) **Ag 105**
- Botkin, L. A.** Stress Analysis (C) **O 42**
- Botman, M.** Plant Indexing in Planetary Gears for Minimum Vibration (79-DET-73) (A) **N 116**
- Bottlenberg, W.** Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ap 102**
- Bottom Reflooding**  
Heat Transfer Immediately Downstream of the Quench Front During Reflooding (79-HT-48) (A) **N 102**
- Bottomhead Penetration**  
Elastic-Plastic Stress Analysis and ASME Code Evaluation of a Bottomhead Penetration in a Reactor Pressure Vessel (79-PVP-17) (A) **Ag 104**
- Bottoming Cycle**  
Power from Waste Heat Streams—An Advanced Concept (BTR) **Ag 46**
- Bottoming Cycle Power**  
Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **Je 105**
- Botts, T. E.** Laser-Particle Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Je 102**
- Boucher, R. J.** Project Sunrise (78-WA/Aero-15) **Ap 101**
- Boudet, R.** A Technical Theory of Dynamical Torsion for Beams of any Cross-Section Shapes (79-DET-59) (A) **N 114**
- Bougie, G. J.** Coal Preparation and Handling for a Mine-Mouth Power Station: Design Concepts and Operating Experience (79-JPGC-Pwr-3) (A) **D 97**
- Boulisset, R.** Elevated Temperature Tensile Properties of Alloy Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Ja 98**
- Boundary Conditions**  
Analysis of Anisotropic Sandwich Plates Assuring the Continuity of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**  
Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**  
Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**  
An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**  
Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 88**
- Boundary Layer Equations**  
Prediction of Incompressible Turbulent Separating Flow (78-WA/FE-4) (A) **Je 89**
- Boundary Layer Flows**  
Thermal Ignition Analysis in Boundary Layer Flows (78-WA/HT-47) (A) **Ap 92**
- Boundary Layer Parameters**  
Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) (A) **Mr 92**
- Boundary Layer Properties**  
Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) (A) **S 105**
- Boundary Layer Skewing**  
The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Je 99**
- Boundary Layers**  
Asymmetric Boundary Layer on a Nonisothermally Heated Cone (79-HT-108) (A) **N 108**  
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 98**  
Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Je 99**  
An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**  
An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Je 95**  
Free Convection Boundary Layers on a Non-Isothermal Vertical Flat Plate (79-HT-112) (A) **N 108**  
Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**  
Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**  
Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**  
Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ap 92**  
Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Je 89**  
Study of Mean- and Turbulent-Velocity Fields in a Large-Scale Turbine-Vane Passage (79-GT-33) (A) **Je 100**  
Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Je 89**  
Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Je 89**  
Transition Procedure of Instantaneous Boundary Layers (79-GT-128) (A) **Je 98**  
Turbulence Management in a High-Speed Boundary Layer Facility (79-FE-7) (A) **O 85**
- Boundary Measurement**  
Measurement of the Elastic-Plastic Boundary Around Cold-worked Fastener Holes (78-WA/APM-2) (A) **My 103**
- Bowen, T. L.** Feasibility of an Isolated Reverse Turbine Concept for Marine Propulsion (79-GT-63) (A) **Je 93**
- Bowman, E. R.** Test and Analysis of the ASALM-PTV Insulated Combustion Chamber (79-ENAS-21) (A) **O 88**
- Boyd, W. K.** Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**
- Boyd, C. K., Jr.** Applications of the Thermoelectrically Integrated Membrane Evaporator System (79-ENAS-48) (A) **O 91**
- Braslen, R. J.** A Generalized Torsion Spring Design Method (78-DET-86) (A) **Je 90**; Helical Torsion Spring Design **Ag 30**
- Bradley, W. B.** Failure of Inclined Boreholes (78-Pet-44) (A) **F 124**
- Brake Drums**  
Thermal Stress Evaluation of Industrial Brake Drums Using Finite Element and Finite Difference Techniques (79-DE-20) (A) **Ag 103**
- Brake Plates**  
Design Improvement of a Friction Brake Plate Through Finite Element Analysis (79-DE-18) (A) **Ag 103**
- Branch Piping**  
Criteria and Associated Dynamic Elastic Plastic Analysis of Auxiliary Branch Piping for a Large LOCA (79-PVP-26) (A) **Ag 106**
- Brandley, J. R.** A Case Study in Technology Transfer (78-DET-81) (A) **Je 89**
- Braun, C.** Perceptions of Risks and Timing in Breeder Development Decisions (79-JPGC-NE-4) (A) **D 96**
- Bray, D. E.** Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**
- Brayton Systems**  
Novel Ceramic Receiver for Solar Brayton Systems (79-Sol-25) (A) **Ag 95**
- Brazil, R. L.** Fatigue Crack Growth in 2 1/4Cr-1Mo Steel exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**
- Bredin, H. W.** Fluidized Bed Combustion... A New Era in Ship Propulsion **Je 38**
- Breeder Development**  
Perceptions of Risks and Timing in Breeder Development Decisions (79-JPGC-NE-4) (A) **D 96**
- Breeder R&D Programs**  
Impact of Clinch River Breeder Reactor Plant on Breeder Research and Development Programs (79-JPGC-NE-5) (A) **D 97**
- Breeder Reactor Core Components**  
Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct (79-PVP-27) (A) **Ag 105**
- Breeder Reactors**  
Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-Rod Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**  
Experience in the Use of FBR Core Component Structural Design Criteria as Applied FFTF (79-PVP-48) (A) **S 97**  
Overview of Fuel Element Design **Ap 30**  
A Plus for the Breeder Reactor (ES) **N 32**  
A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) (A) **Mr 87**  
Testing of the CRBRP Direct Heat Removal Service in a 1/21 Scale Model (79-HT-5) (A) **O 91**  
Uranium from Seawater (ES) **Je 20**
- Brent System**  
Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Je 91**
- Brews, D. E.** Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Je 95**
- Brewer, J. W.** Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**
- Bridge Celebration**  
Iron Bridge Celebrates 200th Anniversary (NR) **S 70**
- Bridwell, M. C.** Development of Deviation Control Tool (78-Pet-58) (A) **F 128**
- Bright, C. (author)** The Jet Makers: The Aerospace Industry from 1945 to 1972 (CB) **Je 104**
- Briley, R. P.** A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**
- Brill, J. P.** Selection and Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-8) (A) **Je 87**
- Brittle Solids**  
Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**
- Broadened Specification Fuels**  
A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Je 102**
- Broadway, W.** A Pressure Sensitive and Temperature



Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**

**Brodie, L. C.** Bismuth Magnetostrictive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**

**Brochhausen, K.-D.** Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Jl 91**

**Broselow, W.** (author) Science of Materials (CB) **Ag 108**

**Brouillette, A. O.** Applications of the Thermoelectricity Integrated Membrane Evaporator Subsystem (79-ENAs-48) (A) **O 98**

**Brown, A.** Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100**; Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**

**Brown, H. W.** A Reliable Spine Coupling (78-WA/Aero-11) (A) **Ap 101**

**Brown, K. C.** Matching Solar Systems to Industrial Needs (79-Sol-28) (A) **Ag 95**

**Brown, M. W.** On Registration, Unification (C) **F 54**

**Brown, R. A.** Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 98**

**Brown, T. D.** Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) **My 97**; Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Je 97**

**Brown, T. T.** Application of Gas Turbine/Compressors in LNG Plants (79-GT-85) (A) **Jl 95**

**Brunker, A. P.** A Model for the Angular Distribution of Sky Radiance (79-HT-11) (A) **O 92**

**Brunnhuber, R.** A New Computer Code for the Estimation of the Probability of Failure of PWR Pressure Vessels (79-PVP-118) (A) **S 103**

**Brunso, J.** Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Jl 91**

**Bryan, R. H.** Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**

**Bryan, W. J.** In-Core Detection of Nuclear Fuel Assembly Vibration (79-DET-43) (A) **N 113**

**Bryers, R. W.** Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**

**Brynjolfsson, A.** Determination of Specific Heat of Meat (78-WA/HT-57) (A) **Mr 97**; Heat Transfer and the Killing of Bacteria in Thermal Sterilization of Meat Roll (78-WA/HT-58) (A) **Mr 97**

**Bryson, A. E., Jr.** Some Connections Between Modern and Classical Control Concepts (78-WA/DSC-20) (A) **Ap 96**

**Bubble Growth**  
Bubble Growth During Decompression of a Liquid (79-HT-73) (A) **N 104**

**Bubenik, T.** Small-Scale Yielding at the Tip of a Through-Crack in a Shell (79-PVP-89) (A) **S 100**

**Buchanan, T. N.** Temperatures of EBS-11 Subassemblies in Air or Argon without Forced Cooling (79-HT-7) (A) **O 91**

**Bucket Afloat**  
Modal Analysis of Gas Turbine Buckets Using a Digital Test System (79-GT-124) (A) **Ag 100**

**Buckley, S. B.** Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**; A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**

**Buckling**  
Dynamic Buckling of a Damped Externally Pressurized Imperfect Cylindrical Shell (79-APM-21) (A) **S 107**  
Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**  
Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**  
Pictorial Goot (C) **O 53**  
Plastic Buckling of Cylindrical Shells under Axial Compression (79-PVP-99) (A) **S 101**  
A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 98**  
A Simplified Approach to Creep Buckling of Structures Under Varying Loads (79-PVP-70) (A) **S 99**

**Buckling Failure**  
Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**

**Budinger, J. P.** Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Jl 91**

**Buehrer, S. H.** WAM Student Turnout (C) **My 45**

**Buffer Systems**  
Railroad Safety Buffers (BTR) **S 52**

**Bul, T. M.** A Three-Dimensional Analysis for the Rewetting Process of Hot Channels (78-WA/HT-27) (A) **Mr 95**

**Building Design**  
Award-Winning Factory-Produced Building (BTR) **S 56**

**Building Industry**  
Metal Buildings Booming (NB) **Jl 64**

**Building Isolation Systems**  
Aseismic Building Isolation Systems: Better Protection Against Earthquake Damage (79-PVP-54) (A) **S 96**

**Building Models**  
Studying the Convective Heat Transfer from a Building Model with Infrared Camera Techniques (78-WA/HT-58) (A) **Mr 97**

**Building Structures**  
Formulation of Torsional Soil-Foundation Interaction of Building Structures (79-PVP-74) (A) **S 99**

**Bulge Test**  
Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**

**Bulk Food Storage**  
Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products (78-WA/HT-54) (A) **Mr 97**

**Bulk Liquid Tank Container**  
TankTainer—A Portable Bulk Liquid Tank Container for Intermodal Service (78-WA/RT-10) (A) **My 93**

**Bulk Liquid Transportation System**  
TankTrain®—A High Volume Bulk Liquid Transportation System (78-WA/RT-9) (A) **My 93**

**Buller, M. L.** Experimental Study of the Inflow Effects on a Natural Convection Heat Sink (78-WA/HT-30) (A) **Ap 92**

**Bunker, W. W.** A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Jl 102**; Investigation of Process and System Design Variables for Catalytic Combustion of Low-Btu Gas (79-GT-66) (A) **Ag 98**

**Buoy-Cable Systems**  
Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**

**Buoyancy**  
Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**  
Numerical Investigation of Electric Field Effects on Unsteady Buoyant Molten Glass Flows (79-HT-98) (A) **N 107**  
Operating Experience with Marine Riser Buoyancy (78-Pet-56) (A) **F 126**

**Buoyancy Forces**  
Heat Transfer in Turbulent Recirculatory Flows Affected by Buoyancy Forces in Rectangular Cavities (79-HT-77) (A) **N 105**  
Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ap 92**

**Buoyancy Modules**  
A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**

**Buoyant Cylinder**  
Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) (A) **Ja 98**

**Buoyant Plumes**  
Eddy Viscosity Calculations of Turbulent Buoyant Plumes (79-HT-51) (A) **N 103**

**Buoyant Thermal**  
Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**

**Burdick, W. J.** Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**

**Burgess, E. L.** Photovoltaic Concentrator System Technology and Applications Experiments (79-Sol-9) (A) **Ag 93**

**Burgess, J. A.** Auditing an Engineering Organization (78-WA/Mgt-7) (A) **Je 91**; **S 22**

**Buried Pipe**  
A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 96**

**Buried Pipelines**  
Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**

**Burmester, L. C.** A Mobile Apparatus for Solar Collector Testing (79-DE-5) (A) **Ag 101**; Spectral Effects on Direct-Insolation Absorbance of Five Collector Coatings (79-HT-186) (A) **O 93**; Triangular Fin Performance by the Heat Balance Integral Method (78-WA/HT-50) (A) **Mr 96**

**Burner Pilots**  
Those Treacherous Continuous Pilots (78-Pet-45) (A) **F 124**

**Burners**  
Influence of Heat Release Distribution on the Acoustic Response of Long Burners (79-DET-31) (A) **N 112**

**Burney, F. A.** Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**

**Burnham, D. C.** (recipient) Hoover Medal **Ja CR-12**

**Burning Wastes**  
Environmental Effects of Burning Wastes (BTR) **S 61**

**Burns, D. J.** Estimation of Stress Intensity Factors for Embedded Irregular Cracks Subjected to Arbitrary Normal Stress Fields (79-PVP-90) (A) **S 100**

**Burns, C. R.** Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**

**Burton, R. A.** Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**; Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**

**Bus Demonstration**  
Gas Turbine Bus Demonstration (ES) **F 24**

**Busch, C. F.** Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**

**Buses**  
Flywheel Buses (ES) **N 33**  
Leaving the Driving to Us (ES) **D 20**

**Bush, A. W.** Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**

**Business Administration**  
How Much Are MBA's Paid? (EN) **Ap 88**

**Business Success**  
How to Succeed in Business by Trying—Part 1 (CG) **F 74**; Part 2 (CG) **Mr 66**

**Business Survey**  
Purchasing Managers Wary of Recession in 1979 (NR) **Ja 56**

**Butler, R. G., II** Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) (A) **Ja 98**

**Butterfly Valve**  
A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**

**Butters, S. W.** Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**

**Bypass Heat Generator**  
Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Jl 95**

## C

**Cable System**  
Techniques for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**

**Calculation Procedure**  
Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**  
The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Jl 103**

**Calculators**  
Natural Frequencies and Mode Shapes of Multi-Degree-of-Freedom Systems on a Programmable Calculator (79-DET-36) (A) **N 112**  
Sourcebook for Programmable Calculators (CB) **D 109**  
Surface Function Analysis Using a Desk-Top Calculator (79-DE-7) (A) **Ag 102**

**Calibration**  
Generating Ductile Iron Fatigue Data with a Calibrated



- Tuning Fork System (79-DE-11) (A) **Ag 102**
- Callinan, J. P.** The Analysis of Catalytic Heat Exchangers for Diffusion Limited Reactions (79-HT-53) (A) **N 103**
- Calm, J. M.** Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems (78-WA/HT-63) **Ap 93**
- Cam Drive System**  
The Characterization of Cam Drive System Windup (79-DET-24) (A) **N 111**
- Camarda, C. J.** Design, Analysis, and Tests of a Shuttle-Type Heat-Pipe-Cooled Leading Edge (79-ENAs-20) (A) **O 58**
- Camera Focus**  
Camera Focus via Ultrasonic Echo Ranging (BTR) **Ja 44**
- Camera Techniques**  
Studying the Convective Heat Transfer from a Building Model with Infrared Camera Techniques (78-WA/HT-58) (A) **Mr 97**
- Cameron, A.** Effects of Asperities in Elastohydrodynamic Lubrication (79-Lub-6) (A) **D 102**; Optical Analysis of Porous Metal Bearings (78-Lub-29) (A) **Ja 98**; An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**
- Campbell, A. S.** (author) Thermodynamic Analysis of Combustion Engines (CB) **Ag 108**
- Campbell, G. S.** The "Fresh Air" of August (C) **O 42**
- Campbell, J. D.** Elastic-Plastic Tension-Torsion in a Circular Bar of Rate-Sensitive Material (79-APM-22) (A) **S 107**
- Campbell, R. B.** A Pseudo-Random Noise Generator for Dynamic Response Testing of Offshore Structures (79-DET-42) (A) **N 112**
- Campbell, T. C.** Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines (78-WA/MH-1) (A) **My 97**; Coming: New Coal Transportation Modes **S 36**
- Cams**  
Elastic Deformation of Ball Bearings, Gears, and Cams (BTR) **Ji 42**
- Canine Hearing Ability**  
Do Dogs Hear Earthquakes? (C) **Ja 44**
- Canine Ligaments**  
Functional Characterization of Canine Anterior Cruciate Ligaments (79-Bio-1) (A) **S 106**
- Canister Design Tests**  
Handle With Care! (ES) **Mr 23**
- Canisters**  
Design and Development of a Trace Contaminant Removal Canister for Spacelab (79-ENAs-16) (A) **O 87**
- Canned Foods**  
Conduction-Heating Considerations in Thermal Processing of Canned Foods (78-WA/HT-55) (A) **Mr 96**
- Cantilever Pipes**  
The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**
- Capp, S. P.** Momentum and Temperature Balance Measurements in an Axisymmetric Turbulent Plume (79-HT-42) (A) **O 94**
- Car Body Stiffness**  
The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**
- Car Reliability Rate**  
Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**
- Car Wheel Designs**  
Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**
- Caravans, P.** Analysis of Nonlinear Hunting Vibrations of Rail Vehicle Trucks (79-DET-25) (A) **N 111**
- Carbide Tools**  
An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**
- Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 99**
- Carbides**  
Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/Prod-26) (A) **My 100**
- Carbon Dioxide**  
An Oil Bonanza (ES) **N 33**  
A Study of the Reduction of Carbon Dioxide in a Silent Electric Discharge (79-ENAs-13) (A) **O 87**  
Synfuels, CO<sub>2</sub>, and the Weather: A Warning (BTR) **N 71**
- Carbon Dioxide Absorbers**  
Development of the Electrochemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAs-33) (A) **O 89**
- Carbon Dioxide Reduction Technology**  
Bosch: An Alternate CO<sub>2</sub> Reduction Technology (79-ENAs-32) (A) **O 89**
- Carbon Monoxide**  
Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**
- Carbon Steel**  
Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) (A) **Mr 90**
- Career Development**  
Causes and Cures of Obsolescence on the Job (EN) **Ap 88**
- Career Guidance**  
Are you in the Right Business? **S 74**  
How to Succeed in Business by Trying—Part 1 **F 74**; Part 2 **Mr 65**
- Carlson, D. L.** A Study of Induction Hardening Hole Surfaces in Clearance Fit Joints to Improve Fatigue Strength (79-DE-10) (A) **Ag 102**
- Carlson, L. E.** New Slant Needed? (C) **My 45**
- Carlson, T. C. G.** A Comprehensive Energy Analysis Applied to and Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**
- Carlucci, L. N.** Damping and Hydrodynamic Mass of a Cylinder in Simulated Two-Phase Flow (79-DET-81) (A) **D 104**
- Carmona, T. C.** Cooling Air in Turbulent Flow with Multi-Pass Internally Finned Tubes (78-WA/HT-52) (A) **Mr 98**; Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 90**
- Carr, E.** The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**
- Carrier, G. F.** (recipient) Timoshenko Medal **Ja CR-13**
- Carroll, M. R.** Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Ji 97**
- Carubba, R. V.** Investigation of Process and System Design Variables for Catalytic Combustion of Low-Btu Gas (79-GT-66) (A) **Ag 98**
- Carta, F. O.** Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Ji 99**
- Carter, A. L.** Impact of Building Design on Auxiliary Liquid Metal Piping (79-NE-8) (A) **S 105**
- Carter, D. A.** Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce Emissions (78-Pet-27) (A) **Ja 99**
- Carter, W. A.** Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) (A) **My 96**
- Caruana, A.** System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**
- Cascade Pitching Stability**  
Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Ji 99**
- Cascade Shock Losses**  
Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ji 98**
- Cascades**  
Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Ji 96**; Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Ji 97**
- Aerodynamics of the Heat Exchangers and Their Arrangement in Large Dry Cooling Towers (78-WA/HT-19) (A) **Ap 91**
- Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Ja 99**
- An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Ji 91**
- The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Ji 98**
- Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Ja 99**
- Design and Testing of Two Supercritical Compressor Cascades (79-GT-111) (A) **Ja 99**
- The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Ja 99**
- An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**
- Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Ja 99**
- A General Solution for Distorted Flow in Cascades of Aerofoils (79-GT-65) (A) **Ji 93**
- Investigations of Transonic Turbine Cascade with High Slagger and Low Solidity (79-GT-25) (A) **Ja 100**
- Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) (A) **Ap 89**
- Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ji 98**
- Shock Boundary Layer Interaction on High Turning Transonic Turbine Cascades (79-GT-37) (A) **Ag 98**
- Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 88**
- Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-18) (A) **Ja 99**
- Cascading Solar Cells**  
Cascading Solar Cells May Increase Efficiencies (BTR) **Ap 47**
- Case Materials**  
The Case for Welded Steel Cases (BTR) **Ap 52**
- Casing Shoe Pressure**  
Annular Geometry—Its Effect of Kick Tolerance (78-Pet-63) (A) **F 127**
- Casings**  
Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**
- Casullo, J. C.** Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**
- Castings**  
Forgings Replace Castings on Larger Turbine Vanes (BTR) **Mr 51**
- Cataldi, C.** Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**
- Catalytic Ceramic Structure**  
The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Ja 100**
- Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) (A) **Ap 89**
- Catalytic Combustion**  
Catalytic Combustion for Gas Turbine Applications (79-GT-188) (A) **Ag 100**
- Catalytic Combustion for System Applications (79-HT-54) (A) **N 103**
- Catalytic-Combustor Program**  
The Advanced Low-Emissions Catalytic-Combustor Program: Phase I—Description and Status (79-GT-192) (A) **Ji 103**
- Catalytic Combustors**  
Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**
- Heat and Mass Transfer in a Catalytic Combustor (79-HT-57) (A) **N 103**
- Liquid Droplet Heating and Vaporization in the Catalytic Combustor (79-HT-52) (A) **O 92**
- Catalytic Converters**  
Catalytic Converter Research (EN) **Ji 67**
- Converters Catalyze Controversy... (C) **N 54**
- The Segmented Oxidizing Monolith Catalytic Converter—Theory and Performance (79-HT-55) (A) **N 103**
- Catalytic Heat Exchangers**  
The Analysis of Catalytic Heat Exchangers for Diffusion Limited Reactions (79-HT-53) (A) **N 103**
- Catalytic Reactor Behavior**  
Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ag 100**
- Catalytic Reduction**  
Catalytic Reduction of Nitrogen Oxides Emitted from Stationary Sources (78-Pet-29) (A) **F 122**
- Catalytic Combustion**  
Investigation of Process and System Design Variables for Catalytic Combustion of Low-Btu Gas (79-GT-66) (A) **Ag 98**
- Catch Basins**  
Impervious Liner for Catch Basins (BTR) **Ap 54**
- Calipovic, N. M.** An Analytical Study of Heat Transfer to a Horizontal Cylinder in a Large Particle Fluidized Bed (79-HT-78) (A) **N 105**
- Calton, L.** Asymmetric Boundary Layer on a Nonisothermally Heated Cone (79-HT-108) (A) **N 108**; The Effect of Applied Temperature Gradients on the Convective Instability of a Volumetrically Heated Porous Bed (79-HT-30) (A) **Mr 94**; Thermal and Hydrody-

- dynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**
- Cauk, D. A.** The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) (A) **Mr 90**; On the Hardening Response in Small Deformation of Metals (78-WA/APM-17) (A) **My 104**; On the Onset of Breakup in Inviscid and Viscous Jets (79-APM-7) (A) **S 105**
- Cavern Stability**  
A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**
- Cavitating Bluff Bodies**  
Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Je 89**
- Cavitation**  
Velocity Exponent for Erosion and Noise Due to Cavitation (79-FE-9) (A) **O 85**
- Cavities**  
Heat Transfer in Turbulent Recirculatory Flows Affected by Buoyancy Forces in Rectangular Cavities (79-HT-77) (A) **N 105**  
Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**  
Natural Convection in Heat Generating Fluids in Cavities (79-HT-95) (A) **N 107**
- Cawley, P.** Defect Location in Structures by a Vibration Technique (79-DET-46) (A) **N 114**
- Cds-Based Solar Cells**  
Low-Cost Thin-Film Cds-Based Solar Cells: Progress and Promise (79-Sol-15) (A) **Ag 94**
- Celestial Mechanics**  
Copernicus Questioned (C) **My 45**
- Cell Research**  
Silicon Solar Cells (F) **S 65**
- Cells**  
Effect of Cell Size on Natural Convection in High L/D Tilted Rectangular Cells Heated and Cooled on Opposite Faces (78-WA/HT-5) (A) **Mr 93**
- Cellulosic Feed Materials**  
Production of High Value Solid Fuels from Cellulosic Feed Materials by the Koppelman Process (79-Sol-33) (A) **Ag 96**
- Cemented Carbide Tools**  
Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 99**
- Cemented Carbides**  
Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/Prod-26) (A) **My 100**
- Census Plans**  
A New and Improved Census in 1980 (NB) **F 70**
- Centennial Membership Drive**  
Contributions to Rose Parade Fund Are Rolling In **My 83**  
Ensure ASME's Future—Back the Centennial Membership Drive (PS) **My 74**
- Centennial Profile**  
Alexander L. Holey, Builder of the Modern Steel Industry **D 22**  
The Founding of ASME **O 20**  
Past is Prologue (Ed) **O 17**
- Centennial Update**  
ASME Loves a Parade **Mr 72**  
Centennial Calls for Papers **Mr 72**  
Centennial Notes **Ji 74, O 68, D 83**  
Emerging Technology Conferences: PVP and Potpourri **My 88**  
Founding of ASME to be Celebrated in February '80 **F 113**  
More Emerging Technologies Conferences **Je 75**  
More ETC Progress Reports **S 80**
- Central Receiver Concept**  
Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Ji 91**
- Central Receiver Power Plant**  
Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**
- Central Receiver Test Facility (CRTF)**  
Search for a PBH via a CRTF—or How to Cram Mt. Everest into an Atomic Nucleus (BTR) **N 70**
- Central Solar Receiver**  
Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**
- Centrifugal Air Compressors**  
Design Audit, Testing and Commissioning of Two 9000 HP Centrifugal Air Compressor Trains (78-Pet-48) (A) **F 125**
- Centrifugal Chillers**  
Application of Energy Conservation Methods to Industrial Refrigeration Systems (78-IPC-Pwr-5) (A) **Je 91**
- Centrifugal Compression System**  
Distinctions Between Two Types of Self Excited Gas Oscillations in Vaneless Radial Diffusers (79-GT-58) (A) **Ji 82**
- Centrifugal Compressor Impellers**  
An Analysis of Three-Dimensional Flow in a Centrifugal Compressor Impeller (79-GT/Isr-13) (A) **O 83**  
A Blade-to-Blade Solution of the Flow in a Centrifugal Compressor Impeller with Splitters (79-GT/Isr-17) (A) **O 84**  
The Production of Vorticity and Its Effects on the Flow in Centrifugal Compressor Impellers (79-GT-113) (A) **Ji 86**
- Centrifugal Compressors**  
Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance (78-Pet-28) (A) **F 122**  
Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Ji 94**  
Matching of Turbocomponents Described by the Example of Impeller and Diffuser in a Centrifugal Compressor (79-GT/Isr-9) (A) **O 82**
- Centrifugal Fans**  
A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) (A) **Mr 90**
- Centrifugal Gas Compressors**  
Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **Ji 95**
- Centrifugal Impeller**  
The Development of Wake Flow in a Centrifugal Impeller (79-GT-152) (A) **Ji 99**
- Centrifugal Pumps**  
Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**
- Centrifuge Technique**  
Centrifuge Plant (ES) **Ag 19**
- Century 2**  
Century 2—ETC Progress Report (CU) **Ag 70**  
Planning for the Challenges of Century 2 **Ag 72**
- Century Two Convocation**  
ASME Strategies and Structures for Century Two—Part 1: Structures **D 26**
- Ceramic Applications**  
Ceramic Applications in Turbine Engines (79-GT-75) (A) **Ji 94**
- Ceramic Armor**  
Transparent Ceramic Armor (BTR) **My 52**
- Ceramic Components**  
A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Ji 103**
- Ceramic Heat Exchanger**  
Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**  
The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ji 96**
- Ceramic Materials**  
Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications (78-WA/GT-16) **Ap 90**
- Ceramic Nozzles**  
Application of All-Ceramic Nozzle to Radial Flow Turbine (79-GT-96) (A) **Ag 96**
- Ceramic Receivers**  
Novel Ceramic Receiver for Solar Brayton Systems (79-Sol-25) (A) **Ag 95**
- Ceramic Seal System**  
Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) (A) **Ap 89**
- Ceramic Technology**  
Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**
- Ceramic Utility Gas Turbines**  
Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) (A) **Ap 89**
- Ceramics**  
Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji 93**
- Cerkowicz, A. E.** Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Ji 103**
- Cermack, E. P.** Construction of Nonlinear Monotonic Functions With Selectable Intervals of Almost Constant or Linear Behavior (78-WA/APM-22) (A) **My 104**
- Cesa, R. D. (author)** Radiation Heat Transfer (CB) **Ja 100**
- Ceylan, H. T.** Long-Time Solutions to Heat-Conduction Transients with Time-Dependent Inputs (79-HT-66) (A) **N 104**
- Cha, Y. S.** Bubble Growth During Decompression of a Liquid (79-HT-73) (A) **N 104**
- Chain Drives**  
Some Considerations on the Application of Chain Drives to Diesel Engines (78-DGP-4) (A) **Ja 86**
- Chains**  
Analysis of Massless Elastic Chains with Servo Controlled Joints (78-WA/DSC-34) (A) **Ap 99**
- Chamber Design**  
Subsonic Chamber Design for the Dry Containment of Well-head Equipment (78-Pet-43) (A) **F 125**
- Champine, G. A. (author)** Computer Technology Impact on Management (CB) **My 107**
- Chan, S. H.** Heat Transfer in Thermally Developing, Absorbing, Emitting and Scattering Slug and Couette Flows Between Parallel Plates with Collocation Method (79-HT-20) (A) **O 83**
- Chandler, F. O.** The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**
- Chandran, K. B.** Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**; Clinical Implications of Pressure-Deformation Analysis of the Aortic Arch with Local Variations in the Elastic Property (79-Bio-5) (A) **S 100**
- Chandran, R.** Local Heat Transfer Coefficients Around Horizontal Tubes in Fluidized Beds (79-HT-75) (A) **N 105**
- Chang, D. C.** The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) (A) **Mr 90**
- Chang, K. J.** Elastic Bending of Beams under Time-Varying Moments—A State Variable Approach (79-PVP-82) (A) **S 100**
- Chang, S. S.-H.** Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**
- Chang, T. Y.** Design of Elevated Temperature Piping for Advanced Nuclear Plants (79-NE-7) (A) **S 105**; External Hydrostatic Pressure Loading of Concrete Cylinder Shells (79-PVP-125) (A) **S 104**
- Chao, B. T.** Update: Mechanical Engineering Education in the People's Republic of China **O 36**
- Chao, N. H.** Phase Change in Liquid Phase Seals: Roman II-Isenthalpic and Adiabatic Bounds With Real Fluids (79-Lub-4) (A) **D 102**
- Chappell, M. S.** The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**
- Chapple, P. M.** Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**
- Characteristic Method**  
Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **Je 100**
- Charge Air Cooling**  
Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine (78-DGP-10) (A) **Ja 87**
- Charge Cooled Engines**  
Air Consumption and Nitrogen Oxide Emissions of Charge Cooled Engines (78-DGP-12) (A) **Ja 87**
- Charging Conveyor**  
Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) **My 97**
- Chase, D. L.** Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Ji 97**
- Chato, J. C. (recipient)** Charles Russ Richards Memorial Award **Ja CR-13**
- Chauhan, V. M.** Seismic-Evaluation of Piping and Supports at Diablo Canyon Site Units 1 and 2, for the Postulated Hosnri Earthquake (79-PVP-100) (A) **S 102**

**Chawla, T. C.** Heat Transfer in Thermally Developing, Absorbing, Emitting and Scattering Slug and Couette Flows Between Parallel Plates with Collocation Method (79-HT-20) (A) **O 93**

#### **Chebyshev Matrix Methods**

Chebyshev Matrix Methods for the Heat Equation: Convergence and Accuracy (79-HT-62) (A) **N 104**

**Cheek, W. D.** Judging Judgment (C) **Mr 44**

#### **Chemical Compounds**

Lake Superior and PCB Pollution (BTR) **D 63**

#### **Chemical Conditioning**

An Emissions First (ES) **Ja 18**

#### **Chemical Explosives**

Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**

#### **Chemical Reactions**

The Storage and Regeneration of Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

#### **Chemical Technology**

Please Note... (C) **O41**

**Chen, E. C. M.** The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

**Chen, E. C. M.** The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

**Chen, E. P.** Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) (A) **Ag 103**

**Chen, E. Y.** Metallurgical Studies of Deepwater Pipeline Laid by Reeled Pipe Method (78-Pet-55) (A) **F 126**

**Chen, F. Y.** Thermionic Power Converters Mechanical Systems (78-DET-74) (A) **Ja 89**

**Chen, J. C.** Flow Dynamics of Volume-Heated Boiling Pools (79-HT-102) (A) **N 108**; Local Heat Transfer Coefficients Around Horizontal Tubes in Fluidized Beds (79-HT-75) (A) **N 105**

**Chen, R. Y.** Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-DE-8) (A) **O 84**

**Chen, T. L. C.** Whirling Response and Stability of Flexibly Mounted Ring-Type Flywheel Systems (79-DET-71) (A) **N 116**

**Chen, T. S.** Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ag 92**; Wave Instability of Mixed Convection Flow on Inclined Surfaces (79-HT-105) (A) **N 107**

**Chen, W. F.** External Hydrostatic Pressure Loading of Concrete Cylinder Shells (79-PVP-125) (A) **S 104**

**Chen, W. J.** Effect of Flow Channel Orientation on Rewetting Phenomenon (78-WA/HT-31) (A) **Mr 95**; Effect of Partial Flow Blockage on Rewetting of Vertical and Horizontal Circular Ducts (79-HT-44) (A) **O 95**

**Chen, W. L.** Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**

**Chen, Yu** An Analysis of the Thermoelastic Problem in a Slab (79-HT-59) (A) **N 103**

**Cheng, H. S.** Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) (A) **Ja 95**

**Cheng, K.-M.** Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**

#### **Chemical Additive Solutions**

Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce Emissions (78-Pet-27) (A) **Ja 99**

**Chern, J. M.** A Simplified Approach to Creep Buckling of Structures Under Varying Loads (79-PVP-70) (A) **S 99**

**Chia, W. K. R.** Preheat Temperature for Vacuum Dewatering of Sealed Bit Bearing Prior to Greasing (78-Pet-38) (A) **F 124**

**Chiang, C. W.** Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Je 94**

**Childs, D. W.** Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) (A) **Mr 85**

**Chin, J. B.** Empathy Evoked (C) **Ji 39**

**Chiu, J. P.** The Effect of the Longitudinal Heat Conduction and the Flow Nonuniformity on the Thermal Performance of Crossflow Heat Exchanger (78-WA/HT-51) (A) **Mr 96**

#### **Chip Breaking**

On the Mechanism of Chip Breaking (78-WA/Prod-21) (A) **My 100**

**Christensen, H.** Micropolarity—Roughness Interaction in Hydrodynamic Lubrication (79-Lub-8) (A) **D 102**

**Chitty, D. E.** Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**

#### **Chlorine Production**

Chlorine and Energy Savings (ES) **My 20**

#### **Chlorophyll**

Playing with Mother Nature (ES) **N 33**

Reproduce Plant Chlorophyll in Lab (BTR) **N 85**

**Chmielewski, J. F.** Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**

**Cho, S. M.** Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**; A Numerical Solution Method for the Prediction of Flow and Thermal Distribution in Shell-and-Tube Heat Exchangers (79-HT-63) (A) **N 103**

**Chondros, T. G.** Identification of Cracks in Circular Plates Welded at the Contour (79-DET-106) (A) **D 106**

**Chongrueng, S.** Nucleate Boiling Performance of Refrigerants and Refrigerant-Oil Mixtures (79-HT-79) (A) **N 105**

**Choros, J.** A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) (A) **S 106**

**Chou, C. C.** Approximate Eigenvalues for Systems with Variable Parameters (78-WA/PM-29) (A) **Ja 93**

**Chow, L. S. H.** Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**

**Chow, M. C.** Signature Analysis for Mechanical Systems via Dynamic Data System (DDS) Monitoring Technique (79-DET-10) (A) **N 110**

**Chow, W. L.** Base Pressure Associated with Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) (A) **S 108**

**Choy, K. C.** Stability and Transient Characteristics of Four Multilobe Journal Bearing Configurations (79-Lub-3) (A) **D 102**

**Christensen, R. M.** Elections: to Fellow Grade **D 93**

**Christopher, H.** (author) Geothermal Energy: Its Past, Present and Future Contributions to the Energy Needs of Man (CB) **Ji 106**

**Chu, E. K.** Catalytic Combustion for Gas Turbine Applications (79-GT-188) (A) **Ag 100**; Catalytic Combustion for System Applications (79-HT-54) (A) **N 103**

**Chung, B. T. F.** An Analysis of Heat Transfer in a Turbulent Heat-Generating Flow with High Prandtl Numbers (79-HT-114) (A) **N 108**

**Chung, J. S.** Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) (A) **Ja 98**

**Ciliberti, D. F.** Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**

**Cincotta, G. A.** System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**

#### **Circle Display**

Traveling in the Best Circles (C) **Ji 40**

#### **Circuit Breakers**

A New Rapid-Response Hydraulic Actuator-Design, Analysis and Test Results (79-DE-3) (A) **Ag 101**

#### **Circular Bars**

Elastic-Plastic Tension-Torsion in a Circular Bar of Rate-Sensitive Material (79-APM-22) (A) **S 107**

#### **Circular Cracks**

Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) (A) **Ag 103**

#### **Circular Cylinders**

Laminar Film Condensation Over a Vertical Circular Cylinder with Effect of Electrical Field (78-WA/HT-49) (A) **Mr 96**

#### **Circular Diaphragms**

An Approximate Explicit Solution for Polar Strain of Hydraulically Blunged Circular Diaphragms (79-DET-111) (A) **D 106**

#### **Circulation**

Dynamic Simulation of LMFBR Plant Under Natural Circulation (79-HT-6) (A) **O 91**

Experimental Study of the Transition from Forced to Natural Circulation in EBR-II at Low Power and Flow (79-HT-10) (A) **O 92**

#### **Circulatory Paths**

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**

#### **Circumferential Pressure**

The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ji 103**

#### **Citrus Waste**

Fuel from Citrus Waste (EN) **Ag 84**

#### **Clamped Plates**

Natural Frequencies of Clamped Orthotropic Rectangular Plates With Varying Thickness (78-WA/APM-9) (A) **My 104**

**Clare, G.** Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**

**Clark, D. C.** Bosch: An Alternate CO<sub>2</sub> Reduction Technology (79-ENAs-32) (A) **O 89**

**Clark, J. A.** (recipient) Heat Transfer Memorial Award **Ja CR-13**

**Clarke, H.** Behaviour of Metallic Safety Rupture Diaphragms Containing Imperfections (79-DET-107) (A) **D 106**

#### **Classical Analysis**

Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**

#### **Classical Control Concept**

Some Connections Between Modern and Classical Control Concepts (78-WA/DSC-20) (A) **Ap 96**

**Clayton, R. M.** A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Ji 102**

#### **Clean Air Act Amendments of 1977**

Effects of Clean Air Act Amendments of 1977 on Construction or Modification of Natural Gas Processing Plants (78-Pet-10) (A) **Ja 97**

#### **Cleanup Systems**

Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**

#### **Clearance Control**

Application of Abrasive Coatings to Clearance Control in the Gas Turbine (79-GT-48) (A) **Ag 98**

#### **Clearance Fit Joints**

A Study of Induction Hardening Hole Surfaces in Clearance Fit Joints to Improve Fatigue Strength (79-DE-10) (A) **Ag 102**

**Cleary, M. P.** Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**

**Clements, H. A.** Marine Reversing Gear Incorporating Single Reversing Hydraulic Coupling and Direct-Drive Clutch for Each Turbine (79-GT-61) (A) **Ag 98**

**Cleveland, A. B., Jr.** Application of Automated Design to Piping Systems: Routing and Support Location (79-PVP-44) (A) **Ag 107**

**Close, S. A.** Application of Automated Design to Piping Systems: Routing and Support Location (79-PVP-44) (A) **Ag 107**

#### **Closed Brayton Engine**

Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Ji 100**

#### **Closed Cavity**

Natural Convection of a Heat Generating Fluid in a Closed Cavity (78-WA/HT-6) (A) **Mr 93**

#### **Closed Crack Tip**

A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) (A) **Je 93**

#### **Closed-Cycle Engines**

Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**

#### **Closed-Cycle Gas Turbines**

The Behavior of a Closed-Cycle Gas Turbine with Time Dependent Operating Conditions (79-GT/Isr-2) (A) **O 83**

Closed-Cycle Gas Turbine (ES) **D 21**

Closed Cycle Gas Turbines, An ECAS Update: Part 1 (79-GT-204) (A) **Ag 100**

Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Ji 91**

The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**

Utilization of the Cold by LNG Vaporization with Closed-Cycle Gas Turbine (79-GT-84) (A) **Ag 98**

#### **Closed-Cycle Power Plant**

Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant



(79-GT-156) (A) **Jl 100**

**Closed-Cycle System**  
Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Jl 81**

**Closed-Cycle Turbine**  
A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-82) (A) **Jl 92**

Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Jl 93**

Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Jl 98**

**Closed Cycles**  
Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Jl 97**

**Closed-Ecology Life Support Systems**  
Closed-Ecology Life Support Systems (CELSS) for Long-Duration, Manned Missions (79-ENAs-27) (A) **O 88**

**Closed-Form Solutions**  
Approximate Eigenvalues for Systems with Variable Parameters (78-WA/APM-29) (A) **Je 93**

**Closed Horizontal Channels**  
Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Je 89**

**Closed-Loop Controls**  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**

Move Toward Closed-Loop Control in Die Casting (BTR) **F 58**

**Closed-Loop Development**  
Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Jl 94**

**Closed Loop In-Reactor Assembly**  
Closed Loop In-Reactor Assembly (CLIRA)—A Fast Flux Test Facility Test Vehicle (78-WA/NE-6) (A) **Mr 88**

**Closed Loop Source Monitoring**  
Closed Loop Source Monitoring Saves Energy and Money (78-WA/APC-6) (A) **Ap 103**

**Closed-Loop Testing**  
Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **Jl 95**

**Closed-Loop Turbine**  
Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Jl 93**

**Closed Spaces**  
Numerical Solution of Two-Dimensional Natural Convection in Enclosed Spaces (78-WA/HT-11) (A) **Mr 93**

**Clover, C. D.** A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 98**

**Clutch Assemblies**  
Power Trains for Tractors **Ap 48**

**CNC Interpolators**  
The Direct-Search Method in CNC Interpolators (78-WA/Prod-40) (A) **My 102**

**Co-Turboshaft**  
The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Jl 98**

**Coach Trucks**  
The LRC Coach Trucks and Suspension (79-RT-4) (A) **Ag 96**

**Coagulating Process**  
Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monoactive Electrocoagulation (78-WA/HT-66) (A) **Ap 93**

**Coal**  
Bullish on Coal (ES) **My 21**

Coal in Transition (ES) **O 19**

Coal Use Can Triple, But at Cost to Public and Industry (BTR) **O 48**

Coming: New Coal Transportation Modes **S 36**

Conversion of Industrial Plants to use Coal as Fuel (78-IPC-Fu-2) (A) **Ja 91**

Energy from Coal in the Year 2000 (BTR) **S 52**

Frozen Coal (ES) **Ap 20**

Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**

Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**

Power Plant Performance Model (79-JPGC-Pwr-1) (A) **D 87**

The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**

**Sulfur Eaters (BTR) S 57**

**Coal Ash**  
Effect of Composition of Melting Behavior on Coal Ash (78-WA/CD-2) (A) **Je 91**

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**

**Coal Ash Deposits**  
Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**

**Coal-Cleaning Facility**  
Coal-Cleaning Facility (ES) **Ag 18**

**Coal Combustion**  
Coal Combustion (C) **O 42**

Cogeneration at Oak Ridge (ES) **N 33**

Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Jl 103**

**Coal Combustor**  
Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Jl 97**

Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Jl 99**

**Coal Conversion**  
Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Ja 98**

Coal-Feeding Systems (ES) **Ap 21**

Space-Age Coal Conversion (ES) **Je 18**

**Coal-Conversion Plants**  
Steel for Coal-Conversion Plants (EN) **O 64**

**Coal Costs**  
Nuclear Vs. Coal Costs (NB) **Je 67**

**Coal-Derived Fuels**  
Coal-Fired Gas Turbine (ES) **Mr 22**

Coal to Pipeline Gas (ES) **Mr 23**

Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **Jl 102**

Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Jl 101**

The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Jl 91**

Hands Across the Sea! (ES) **Mr 22**

A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Jl 102**

So You Want to Burn Coal (WW) **Mr 68**

Solid Backing for Gasification (ES) **Ja 19**

SRI President Sees Hope in Energy Crunch (NR) **My 50**

Super-Efficient Water-Cooled Gas Turbine (BTR) **Ja 50**

Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**

**Coal-Derived Liquids**  
The Modeling of NO Generation from Coal-Derived Liquids in Combustion Turbines (79-JPGC-GT-4) (A) **D 98**

**Coal Desulfurization**  
Coal Desulfurization Prior to Combustion (CB) **F 135**

**Coal-Fired Combustors**  
The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Jl 94**

**Coal-Fired Engine**  
Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory (78-WA/Fu-1) (A) **Je 95**

**Coal-Fired Fluidized Beds**  
Advanced Heat Exchanger Configurations for Coal-Fired Fluidized Beds (78-WA/HT-40) (A) **Ap 91**

**Coal-Fired Gas Turbines**  
Laser-Particle Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Jl 102**

**Coal-Fired Power Plants**  
Coal or Lignite Handling Functions by Least Input Power (79-IPC-Fu-2) (A) **D 101**

Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**

**Coal Firing**  
Gas Stream Composition and Temperature Determination in a Coal-Fired MHD Simulation Facility (78-WA/HT-23) (A) **Mr 94**

**Coal Furnace**  
Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Jl 100**

**Coal Gas**  
Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-198) (A) **Jl 104**

**Coal Gas Streams**  
Study of Metals Erosion in High Temperature Coal Gas Streams (79-GT-88) (A) **Ag 98**

**Coal Gasification**  
Application of Low-Btu Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**

Evaluating Gasified Coal (ES) **O 18**

High-Temperature Coal Gasification (BTR) **Jl 51**

The LLL Underground Coal Gasification Project: 1978 Status (79-PVP-93) (A) **S 100**

Status of Coal Gasification Program (79-PVP-45) (A) **S 95**

**Coal Liquefaction**  
Coal Liquefaction R&D (BTR) **My 54**

Overview of Coal Liquefaction in the U. S. Department of Energy (79-PVP-45) (A) **S 96**

**Coal Liquids**  
Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Jl 99**

**Coal-Oil Mixtures**  
Utilization of Coal-Oil and Coal-Oil WATER Mixtures in Conventional Fuel Oil Systems (79-IPC-Fu-1) (A) **D 101**

**Coal Preparation Facility**  
Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **My 98**

**Coal Preparation Handling**  
Coal Preparation and Handling for a Mine-Mouth Power Station: Design Concepts and Operating Experience (79-JPGC-Pwr-3) (A) **D 97**

**Coal Research**  
Promoting Coal Research (ES) **Ag 18**

**Coal Slurry Pipelines**  
Coal Slurry Pipelines for the Next Decade **D 38**

Improved Coal-Slurry Pipeline (BTR) **O 48**

A Perspective on Coal Slurry Pipelines for the Next Decade (78-Pet-65) (A) **F 126**

**Coal Transportation**  
Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines (78-WA/MH-1) (A) **My 97**

Rail-to-Barge Transportation of Coal (78-WA/MH-6) (A) **My 98**

**Coal Wastes**  
Artificial Reefs (ES) **Ap 20**

**Coalson, H.** Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy (78-WA/PEM-3) (A) **My 95**

**Coating Materials**  
Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 95**

**Coating Processes**  
Plasma-Spray Coating Processes: Physico-Mathematical Characterization (79-GT/Isr-8) (A) **O 83**

**Coating System**  
Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-8) (A) **Ap 89**

**Coated Rings**  
Development of Piston Rings for High Speed Engines in Europe (78-DGP-18) (A) **Ja 88**

**Codes and Standards**  
Codes, Standards and Certificate of Authorization Program—Part 1 - Establishing Safety Standards **Ja 33**

**Cogeneration**  
Cogeneration—Some Hardware and System Design Parameters (78-IPC-Pwr-6) (A) **Ja 91**

Cogeneration at Oak Ridge (ES) **N 33**

Development Progress on the Atmospheric Fluidized Bed Coal Combustor for Cogeneration Gas Turbine System for Industrial Cogeneration Plants (79-GT-104) (A) **Ag 99**

**Cogeneration Applications**  
The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Enr-4) (A) **Ja 92**

**Cogeneration Facilities**  
Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Jl 98**

**Cogeneration Plants**  
Cogeneration Produces Savings (BTR) **Ap 51**

**Cogeneration Systems**  
Conserving Energy via Cogeneration **Ag 21**

Energy-Conserving Cogeneration-Performance, Economics and Legislation (7-WA/Enr-5) (A) **Je 92**

**Cohen, J. M.** Mass Transfer at the Edge of a Rotating Disk



- (79-HT-34) (A) **O 95**
- Cohn, A.** Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Jl 99**. The Modeling of NO Generation from Coal-Derived Liquids in Combustion Turbines (79-JPGC-GT-4) (A) **D 98**. Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Jl 93**
- Coils**  
Simplified Inelastic Analysis in Helical Coil Heat Exchanger Design (79-NE-2) (A) **S 104**
- Coking Coals**  
Hands Across the Sea! (ES) **Mr 22**
- Colasurdo, G.** Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) (A) **Ap 89**
- Cold Environments**  
Brrrrrr (NB) **D 75**
- Cold Pressure Welding**  
Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **Mr 99**
- Coldworked Fastener Holes**  
Measurement of the Elastic-Plastic Boundary Around Coldworked Fastener Holes (78-WA/APM-2) (A) **My 103**
- Collapse Module**  
Collapse Module Extends Tenfold in Height (BTR) **F 60**
- Collection System**  
Physical Characterization of Particulate Matter from a Turbine Engine (79-GT-179) (A) **Jl 102**
- Collector Coatings**  
Spectral Effects on Direct-Insolation Absorptance of Five Collector Coatings (79-HT-18) (A) **O 93**
- Collector Systems**  
Design Considerations of Small Solar Collector Systems Using Plane Heliostats (79-Sol-2) (A) **Ag 92**  
Evaluation of Particulate Emissions from Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**  
Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Je 95**
- Collectors**  
Ten-Megawatt Solar Facility (ES) **F 25**  
Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Je 94**  
Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Je 94**  
On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**  
Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**  
Solar-Powered Pump (BTR) **O 43**  
A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**
- Collimated Beam of Light**  
Automatic Laser Inspection Machine (BTR) **My 50**
- Colsher, R.** Computerized Time Transient Torsional Analysis of Power Trains (79-DET-74) (A) **N 116**
- Combined Cycle Boiler**  
Soot and the Combined Cycle Boiler (79-GT-67) (A) **Jl 93**
- Combined Cycle Plant Interaction**  
Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Jl 92**
- Combined Cycle Studies**  
System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Jl 92**
- Combined Cycle Systems**  
Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Jl 104**
- Combined Cycles**  
Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Jl 95**  
Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Jl 101**  
GUD-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Jl 98**  
Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Je 100**  
Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Jl 97**
- Combined Dynamical Systems**  
On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) (A) **Je 93**
- Combined Gas Turbine**  
The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**
- Part II—The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**
- Combustion**  
Burning Crude Oil Without Pollution (BTR) **D 61**  
Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**  
Coal Desulfurization Prior to Combustion (CB) **F 135**  
Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory (78-WA/Fu-1) (A) **Je 96**  
The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Jl 102**  
Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT/Isr-12) (A) **O 83**  
Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**  
Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**  
Earth + Water + Air = Fire: The Wet Air Oxidation (WAO) of Wastes **D 30**  
Fluidized Bed Combustion... A New Era in Ship Propulsion **Ja 30**  
Fuel Optimization (ES) **F 25**  
Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) (A) **My 97**  
An Order for Fluidized Bed (ES) **Je 18**  
Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Je 97**
- Combustion Air**  
Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**  
Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**
- Combustion Burner**  
Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Jl 99**
- Combustion Chambers**  
Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Jl 104**  
Test and Analysis of the ASALM-PTV Insulated Combustion Chamber (79-ENAs-21) (A) **O 88**
- Combustion Conditions**  
Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Jl 100**
- Combustion Control**  
In Search of Optimum Fuel Savings (78-WA/Ener-1) (A) **Je 92**
- Combustion Efficiency**  
Methane Utilization (79-GT-139) (A) **Jl 100**
- Combustion Emissions**  
Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Jl 104**
- Combustion Engines**  
Fuel Additives for Internal Combustion Engines: Recent Developments (CB) **Mr 98**  
Piston Motion Influences, Measurements, Calculations (78-DGP-17) (A) **Ja 87**  
Thermodynamic Analysis of Combustion Engines (CB) **Ag 108**
- Combustion Exposure Testing**  
Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Jl 103**
- Combustion Gas Flow**  
Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**
- Combustion Heater Systems**  
Closed Cycle Gas Turbines, An ECAS Update: Part 1 (79-GT-204) (A) **Ap 100**
- Combustion Modifications**  
Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**  
Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**  
Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) (A) **My 96**
- Combustion Oxygen Analyzer**  
Applications of the Electro-Chemical Combustion Oxygen Analyzer (78-IPC-Pwr-3) (A) **Ja 91**
- Combustion Products**  
Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Jl 101**
- Combustion Spray Process**  
Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 89**
- Combustion Systems**  
The Development of the Olympus "C" Gas Generator (79-GT-122) (A) **Jl 97**  
A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Jl 102**  
A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Jl 99**  
Riley and Babcock (ES) **Jl 20**
- Combustion Techniques**  
Techniques of Solid Waste Fuel Combustion (79-IPC-Pwr-3) (A) **D 100**
- Combustion Turbines**  
The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Jl 91**  
Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Jl 90**  
Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**
- Combustion Turbine Blade Passages**  
Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 88**
- Combustor Characteristics**  
The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Jl 103**
- Combustor Liner**  
Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Jl 102**
- Combustor Liner Cooling**  
Evaluation of Laminated Porous Wall Materials for Combustor Liner Cooling (79-GT-100) (A) **Ag 99**
- Combustor/Particulate Control System**  
Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Jl 103**
- Combustor Performance**  
Fuel Property Effects on Combustor Performance (79-GT-178) (A) **Jl 102**
- Combustors**  
Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Jl 104**  
Acoustic Control of the Exit Plane Thermodynamic State of a Combustor (79-GT-180) (A) **Ag 100**  
The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**  
Catalytic Combustion for Gas Turbine Applications (79-GT-186) (A) **Ag 100**  
Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Jl 104**  
Environmental Assessments of Small Scale Fluid Bed Combustors (79-JPGC-Pwr-10) (A) **D 98**  
Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Jl 97**  
Heat Transfer and Pressure Drop in Gas-Cooled Fluidized-Bed Combustors for Gas Turbine Systems: Analysis and Application to Design (79-HT-87) (A) **N 106**  
Operation of GT-225 Diffusion-Flame Combustor on Alternative Fuels Performance, Durability and Emissions (79-GT-138) (A) **Jl 92**  
The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Jl 94**  
Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Jl 99**  
Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) (A) **Ap 89**

Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **J1 100**  
 NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **J1 92**  
**Comfort, R. M.** Numerical Solution of Two-Dimensional Natural Convection in Enclosed Spaces (78-WA/HT-11) (A) **Mr 93**  
**Commercial Buildings**  
 Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **J1 102**  
 A Double Acting Variable Geometry Combustor (79-GT-197) (A) **J1 104**  
 Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ag 100**  
 Low-Emission Combustor (ES) **Ag 18**  
 Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **J1 104**  
 Turn Off the Lights! (ES) **Ag 21**  
**Commercial Design Competition**  
 Hot Competition! (ES) **My 20**  
**Commercial Facilities**  
 Metal Buildings Booming (NB) **J1 84**  
**Commercial Solar System**  
 Commercial Solar System (BTR) **Mr 53**  
**Commercial Warehouses**  
 Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) (A) **Mr 85**  
**Communication**  
 Increasing Communication Between Engineers and Government (WW) **My 72**  
 Teleconferencing Brings Diplomacy into the Space Age (NR) **Ja 57**  
**Community Heat Pumps**  
 Community Heat Pumps (ES) **My 20**  
**Comminous, M.** A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) (A) **Je 93**  
 The Interface Crack in a Combined Tension-Compression and Shear Field (78-APM-23) (A) **S 107; (recipient) Henry Hess Award Ja CR-13**  
**Compact Diesel Engines**  
 Compact Diesel Engines in Traction Applications (78-DGP-8) (A) **Ja 87**  
**Compact Heat Exchangers**  
 Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ag 92**  
**Comparin, R. A.** Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) (A) **O 84**  
**Comparison Performance Tests**  
 Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **J1 102**  
**Complementary Energy Principle**  
 Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**  
**Complex Loading**  
 A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ag 90**  
**Complex Loading Conditions**  
 Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**  
**Complex Rotor Constructions**  
 Methods for Modelling Flanged and Curvic Couplings for Dynamic Analysis of Complex Rotor Constructions (79-DET-65) (A) **N 114**  
**Complex Shapes**  
 Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) (A) **Mr 89**  
**Compliant Rubber Bearings**  
 Stick-Slip Induced Noise Generation in Water-Lubricated Compliant Rubber Bearings (79-Lub-21) (A) **D 104**  
**Component Construction**  
 Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**  
**Component Duty Cycles**  
 A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**  
**Component Evaluation**  
 Move Toward Closed-Loop Control in Die Casting (BTR) **F 58**  
**Component Failures**  
 Multimode Leak Detection System (78-Pet-53) (A) **F 125**

**Component Mode Synthesis**  
 The Application of Component Mode Synthesis to Covered Groups of Blades (79-DET-92) (A) **D 104**  
 Stability Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (79-DET-63) (A) **N 113**  
**Composite Arrangement**  
 Simulation of the Influence of Bonding Materials on the Dynamic Behavior of Laminated Composites (78-WA/APM-15) (A) **My 104**  
**Composite Laminates**  
 Investigation of Characteristic Damage States in Composite Laminates (78-WA/Aero-4) (A) **Ap 100**  
**Composite Material Plates**  
 Behavior of Rectangular Composite Material Plates Under Lateral and Hydrothermal Loads (78-WA/Aero-5) (A) **Ap 100**  
**Composite Materials**  
 The CH-46 Rotor Blade Transition from Metal to Composite Materials (78-WA/Aero-9) (A) **Ap 101**  
 A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**  
 High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**  
**Composite Sandwich Structures**  
 Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**  
**Composite Spherical Pressure Vessels**  
 Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) (A) **S 98**  
**Composites**  
 Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90**  
**Comprehensive Energy Analysis**  
 A Comprehensive Energy Analysis Applied to an Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**  
**Comprehensive Studies**  
 A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**  
**Compressed Air**  
 Drillhole Stimulation in Iceland (78-Pet-24) (A) **Ja 98**  
**Compressible Flow**  
 Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**  
**Compression**  
 Laser Experiments Achieve High Fuel Compression (BTR) **S 58**  
**Compression Equipment**  
 Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **J1 95**  
**Compression Plant**  
 Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **J1 100**  
**Compression System**  
 Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **J1 95**  
**Compression Test**  
 Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**  
**Compressive Strength**  
 A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites (78-WA/Aero-1) (A) **Ap 100**  
**Compressor Cascades**  
 Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Je 99**  
**Compressor Characteristics**  
 Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **J1 101**  
**Compressor Drives**  
 Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **J1 101**  
**Compressor Flow Range**  
 An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Ja 88**  
**Compressor Impellers**  
 The Production of Vorticity and Its Effects on the Flow in Centrifugal Compressor Impellers (79-GT-113) (A) **J1 96**  
**Compressor Maintenance**  
 Reciprocating Engine/Compressor Maintenance and

Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**  
**Compressor Research Facility**  
 Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **J1 103**  
**Compressor Response**  
 Compressor Response to Spatially Repetitive and Non-Repetitive Transients (79-GT/Isr-14) (A) **O 83**  
**Compressor Rotor Blade**  
 Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **J1 104**  
**Compressor Rotors**  
 Forced Vibrations of a Single Stage Axial Compressor Rotor (79-GT-108) (A) **Ag 100**  
**Compressor Stage**  
 Blade-Flow Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **J1 98**  
**Compressor Stations**  
 Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **J1 105**  
 Computer Simulation and Design of the Control System for a Wind Turbine Generator (79-DE-9) (A) **Ag 102**  
**Compressor Units**  
 Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Ja 86**  
**Compressors**  
 Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **J1 98; Part II—Stability and Flutter Boundaries (79-GT-112) (A) J1 97**  
 Application of Gas Turbine/Compressors in LNG Plants (79-GT-85) (A) **J1 95**  
 Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 98**  
 Compressor Rotating Stall in Uniform and Non-Uniform Flow (79-GT/Isr-18) (A) **O 84**  
 Considerations for the Purchase of Gas Gathering Compressors (78-Pet-20) (A) **Ja 98**  
 Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **J1 94**  
 Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **J1 95**  
 Design and Test of an Extremely Wide Flow Range Compressor (79-GT-80) (A) **Ag 98**  
 Design Audit, Testing and Commissioning of Two 9000 HP Centrifugal Air Compressor Trains (78-Pet-48) (A) **F 125**  
 The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **J1 98**  
 Innovative Design of Ceramic Utility GAS Turbines (78-WA/GT-9) (A) **Ap 89**  
 Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**  
 Measured Velocity Characteristics of the Flow in the Impeller of a Centrifugal Compressor (79-HT-32) (A) **O 84**  
 Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) **Ap 89**  
 Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **J1 98**  
 The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **J1 103**  
 The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **J1 96**  
 A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 98**  
 Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **J1 91**  
 Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **J1 100**  
**Computational Enhancements**  
 Computational Enhancements to the Method of Multipliers (79-DET-77) (A) **N 116**  
**Computational Techniques**  
 Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) (A) **Ap 99**  
**Computer-Aided Design**  
 Economic Benefits and Economic Impact of Interactive

Computer-Aided Design (79-PVP-80) (A) **S 100**

**Computer-Aided Drafting**  
CAD Applied to Materials Handling Engineering **N 46**

Computer-Aided Drafting and Applications to Materials Handling Engineering (78-WA/MH-5) (A) **My 98**

**Computer-Aided Fatigue Design**  
Computer-Aided Fatigue Design of Power Transmission Shafts with Strength Constraints Using a Finite Line Element Technique and a Proposed Fatigue Failure Criterion (79-DET-103) (A) **D 106**

**Computer-Aided Techniques**  
Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**

**Computer Algorithms**  
Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**

**Computer Codes**  
Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 96**

A New Computer Code for the Estimation of the Probability of Failure of PWR Pressure Vessels (79-PVP-118) (A) **S 103**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**

**Computer Control**  
Design of Computer Control for Manufacturing Systems (78-WA/Prod-14) (A) **My 99**

Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**

Experience with Experimental Applications of Multivariable Computer Control (78-WA/DSC-26) (A) **Ap 95**

**Computer Control System**  
Advanced Electric Car (BTR) **O 44**

Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **JI 95**

**Computer Engineering**  
New Computer Engineering Division **S 84**

**Computer Game**  
The Energy Game (NB) **S 71**

**Computer Graphics**  
Computer Graphics in Machine Design (79-DE-8) (A) **Ag 101**

A Passive Graphics Program for General Finite Element Analyses (79-PVP-20) (A) **Ag 105**

**Computer Methods**  
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 98**

Interactive Computer Methods for Design Optimization (78-DET-84) (A) **Ja 90**

Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**

A Practical Guide to Computer Methods for Engineers (CB) **S 111**

Roots of Lambda Matrices (78-WA/APM-4) (A) **My 102**

**Computer Models**  
Catalytic Converter Research (EN) **JI 67**

A Rebuttal (ES) **Je 18**

**Computer Programs**  
An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **JI 91**

Bargain Computer Programs (CT) **D 82**

Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **JI 104**

Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**

Evaluation of Internal Combustion Engine Valve Trains by an Empirically Tuned Simulation Model (78-DGP-9) (A) **Ja 97**

Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**

Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**

Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

Mathematical Modelling of Textile Weave Room Sound Propagation (78-Tex-3) (A) **Ja 92**

Microcomputer Application in Engineering Design (78-DET-85) (A) **Ja 90**

A New Heuristic for Improving the Efficiency of Numerically Controlled Punch Presses (78-DET-86) (A) **Ja 90**

Numerical Solution of the Planar Hydrostatic Foil Bearing

(78-Lub-23) (A) **Ja 95**

A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**

SUPAN—A Computer Program for the Analysis of Beam Type Piping Supports (79-PVP-19) (A) **Ag 104**

Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**

Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**

The Train Operations Simulator (TOS)—A Tool for Railroad Accident Investigation (78-WA/RT-3) (A) **My 92**

**Computer Simulation**  
Computer Simulation and Design of the Control System for a Wind Turbine Generator (79-DE-9) (A) **Ag 102**

Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 89**

Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and Its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**

Packaged Processing Plants (IF) **S 64**

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**

Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**

A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**

**Computer Systems**  
Micromouse: A Robot with Unlimited Future (BTR) **S 51**

The Microprocessor: Key to Company Survival? (BTR) **JI 44**

Real Time Process Computer Systems (CT) **Ap 71**

Teleconferences, Electronic Mail in Future for Business (BTR) **Ap 50**

Transit System Safety Analysis (IF) **My 59**

**Computer Techniques**  
Utilization of Computer Techniques in Analyzing Production Trend Problems (78-WA/Aero-16) (A) **Ap 101**

**Computer Technology**  
Computer Technology Impact on Management (CB) **My 107**

**Computer Time**  
Note on Comparison of Nonlinear Optimization Methods (79-DET-118) (A) **D 107**

**Computerized Manufacturing Systems**  
The Future of Numerical Controls **S 27**

**Computerized Time Transients**  
Computerized Time Transient Torsional Analysis of Power Trains (79-DET-74) (A) **N 116**

**Computers**  
Applications for Computers in Industrial Powerhouses (79-IPC-Pwr-6) (A) **D 101**

Automated Highway (BTR) **O 45**

Automotive Computer (BTR) **F 57**

The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **JI 98**

Computer-Controlled Laser Welding (BTR) **Ja 49**

Computer Design Aid (ES) **O 18**

Computer-Designed Gearing **Je 32**

Computer Outlook Still Good (NB) **Ap 65**

Computer-Perfect Engines (BTR) **Je 54**

Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) (A) **My 97**

The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) (A) **My 95**

Fiber Optics Link Manufacturing Processes with Computers (BTR) **D 63**

Have Engineers Been Replaced by Computers? (79-PVP-10) (A) **Ag 104**

Using Simulation to Solve Problems (CB) **O 97**

Utilities Eye Wind-Powered Machine (BTR) **Ja 46**

**Computerized Manufacturing System**  
Analysis of Operating Rules in a Computerized Manufacturing System (78-WA/Prod-38) (A) **My 102**

**Computerized Systems**  
Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Je 96**

**Concentrator Systems**  
Photovoltaic Concentrator System Technology and Applications Experiments (79-Sol-9) (A) **Ag 93**

**Conceptual Design**  
Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **JI 100**

Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **JI 91**

Electronic Hardware and its Impact on Numerical Control (78-WA/DSC-16) (A) **Ap 95**

Electronic Pen Pals (NB) **JI 64**

Industry Calls for Cost Reduction through Better Design Engineering **JI 76**

**Conceptual Fuel Pin Design**  
Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**

**Concrete Slabs**  
Effect of Thickness on Moisture Migration in Light-Weight Concrete Slabs (79-HT-2) (A) **O 92**

**Concrete Technology**  
Concrete Technology: Vol. 1-Properties of Materials (CB) **S 111**

**Condensate Recovery**  
Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**

**Condenser Design**  
Marine Condenser Design Using Numerical Optimization (79-DET-98) (A) **D 105**

**Condenser Height**  
Consideration of Condenser Height in the Optimization of Power Plant Condensers (79-JPGC-Pwr-2) (A) **D 97**

**Condensers**  
Noise Level Considerations Associated with Power Plant Condenser Steam Dump (79-PVP-9) (A) **Ap 104**

**Conditioning Agents**  
Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) (A) **My 97**

**Conduction**  
Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**

Development of Contiguous Element-Two-Dimensional Transient Nonlinear Heat Conduction (79-HT-58) (A) **N 103**

Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**

**Conduction Heating**  
Conduction-Heating Considerations in Thermal Processing of Canned Food (78-WA/HT-55) (A) **My 96**

**Conductive Heat Transfer**  
Mechanism of Freeze-Drying of Porous Bodies by Conductive Heat Transfer (79-HT-86) (A) **N 106**

**Conductivity**  
Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material—Solid Helium (78-WA/HT-12) (A) **My 94**

**Confined Axial Flow**  
Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) (A) **My 105**

**Conform Metal Forming Process**  
Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**

**Congressional Fellow Deadline**  
Increasing Communication Between Engineers and Government (WW) **My 72**

**Conical Diffusers**  
Performance Correlations for Flat and Conical Diffusers (79-GT-52) (A) **JI 91**

**Conical Sections**  
Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**

**Coning**  
The Effect of Coning on Radial Forces in Misaligned Radial Face Seals (79-Lub-17) (A) **D 103**

**Conklin, C. L.** Evaluation of Long-Term Aging Effects on Hydraulic Components and Systems (79-DET-104) (A) **D 105**

**Connolly, J. M.** The Use of Power Series Solutions in Radiation Heat Transfer and Thermal Network Analysis (79-HT-65) (A) **N 104**

**Connolly, J. R.** Engineering Schools (C) **My 44**

**Conry, T. F.** Optimization of Die Profiles for Deep Drawing (79-DET-1) (A) **N 109**; Unbalanced Response of a Large Rotor-Pedestal-Foundation System Using an Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**

**Conservation**  
Conservationist Award (ES) **F 34**

Demonstration of Fuel Conservation in High Temperature



Industrial Furnaces (78-WA/Enr-8) (A) **Je 92**  
 Economic Sizing of Steam Piping and Insulation (78-WA/Enr-9) (A) **Je 93**  
 The Energy Center: New Alternative for Effective Energy Use (CB) **S 112**  
 Energy Conservation (C) **F 55**  
 Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**  
 Energy Consumption and Conservation in University Buildings (78-WA/PEM-4) (A) **My 95**  
 Energy Panel Calls for Consistent Government Energy Policies (NR) **My 64**  
 The Fate of Fuel (NB) **Je 67**  
 Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**  
 Re-Producing (NB) **S 71**  
 Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems (78-WA/HT-63) (A) **Ap 93**  
 Renewable Energy Resources, Full Reports to the Conservation Commission (CB) **Je 104**  
 The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Je 95**  
 The Role of State Government in Industrial Energy Conservation (78-TS-7) (A) **F 130**  
**Conservation Call**  
 Call for Conservation from DOE (C) **Ap 44**  
**Conservation Goals**  
 SRI President Sees Hope in Energy Crunch (NR) **My 60**  
**Conservation Measures**  
 New Environmental Sciences Laboratory at ORNL (EN) **Je 69**  
**Conservation Policy**  
 Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**  
**Constance, J. D. (author)** How to Become a Professional Engineer (CB) **Je 100**  
**Constrained Balancing**  
 Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) (A) **Mr 85**  
**Constrained Flow**  
 Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Je 89**  
**Constrained Space Linkages**  
 Critical Operating Speeds of Constrained Space Linkages Using Spatial Finite Line Element Method and Lumped Mass Systems (79-DET-37) (A) **N 112**  
**Continuous Extrusion Process**  
 Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**  
**Continuous Pilots**  
 Those Treacherous Continuous Pilots (78-Pet-45) (A) **F 124**  
**Continuous Systems**  
 Vibration Analysis of Continuous Systems by Dynamic Discretization (79-DET-12) (A) **N 110**  
**Continuum Mechanics**  
 An Attempt to Provide a Unified Treatment of Tribology Through Load Carrying Capacity, Transport and Continuum Mechanics (79-Lub-18) (A) **D 103**  
**Contour Plots**  
 A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) (A) **Mr 85**  
**Control Concepts**  
 Optimal Control Concepts for the Characterization and Design of Highway Vehicle-Trailer Systems (78-WA/DSC-27) (A) **Ap 96**  
**Control Design**  
 Optimal Control of Turbine Engines (78-WA/DSC-33) **Ap 98**  
 The Performance of Automotive Hand Controls (78-WA/DSC-38) (A) **Ap 99**  
**Control Problem**  
 The Ultimate Control Problem—A Wild Oil or Gas Well **Je 26**  
**Control Procedure**  
 A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**  
 Improving Productivity Through Efficient Engineering Management **Je 27**  
**Control Solution**  
 Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Drivability Constraint (78-WA/DSC-25) (A) **Ap 95**  
**Control Study**  
 Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Je 92**

**Control Subsystem**  
 The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**  
**Control System Design**  
 Orbital Service Module Thermal Control System Design (79-ENAs-22) (A) **O 88**  
**Control System Evaluation**  
 Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/TM-2) (A) **F 131**  
**Control System Thrusters**  
 Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**  
**Control Systems**  
 A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **Je 105**  
 Automated Process Control Systems: Concepts and Hardware (CB) **My 107**  
 Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Je 103**  
 An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Je 94**  
 An Energy-Saving Appliance (ES) **Je 20**  
 Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Je 103**  
 Estimation Theory and its Role in Optimal Control (78-WA/DSC-2) (A) **Ap 93**  
 A Family of Programmable Mechanical Test Systems (BTR) **O 49**  
 Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Je 95**  
 Heavy Duty Gas Turbine Design Changes for Use with Low Bitu Coal Gas (79-GT-196) (A) **Je 104**  
 Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**  
 Practical "On-Engine" Microprocessor Control and Monitoring Systems for Gas Turbines (79-GT-181) (A) **Je 102**  
 Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**  
 Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Je 95**  
 Resonance Equalization in Feedback Control Systems (78-WA/DSC-24) (A) **Ap 95**  
 Simulators to Train Nuclear Plant Personnel (BTR) **O 45**  
 Subsea Chamber Design for the Dry Containment of Well-head Equipment (78-Pet-43) (A) **F 125**  
**Control Techniques**  
 Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**  
 A Double Acting Variable Geometry Combustor (79-GT-197) (A) **Je 104**  
 Experience with Experimental Applications of Multivariable Computer Control (78-WA/DSC-26) (A) **Ap 96**  
 Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Je 97**  
**Control Technology**  
 EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-18) (A) **Je 98**  
 Source Analysis Modeling for Environmental Assessment (78-WA/APC-10) (A) **My 96**  
 Speculations on the Future of Numerical Controls (78-WA/DSC-9) (A) **Ap 94**  
 Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**  
**Controlled Boring Bar**  
 Development of a Hydraulic Chambered, Actively Controlled Boring Bar (78-WA/Prod-20) (A) **My 100**  
**Controlled Destruction**  
 Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monoactive Electrocoagulation (78-WA/HT-66) (A) **Ap 93**  
**Controlled Dewpoint**  
 Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy (78-WA/PEM-3) (A) **My 95**  
**Controller Design**  
 An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) (A) **Ap 95**  
 A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**  
 A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**

**Controller Parameters**  
 Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**  
**Controllers**  
 The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**  
 A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Je 94**  
**Convection**  
 Double-Diffusive Convection in an Infinitely Tall Slot (78-WA/HT-8) (A) **Mr 93**  
 Effect of Cell Size on Natural Convection in High L/D Tilted Rectangular Cells Heated and Cooled on Opposite Faces (78-WA/HT-5) (A) **Mr 93**  
 Free Convection Boundary Layers on a Non-Isothermal Vertical Flat Plate (79-HT-112) (A) **N 108**  
 Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**  
 Laser Anemometer Measurements in Turbulent Natural Convection over a Vertical Flat Surface (79-HT-106) (A) **N 108**  
 The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**  
 Natural Convection of a Heat Generating Fluid in a Closed Cavity (78-WA/HT-6) (A) **Mr 93**  
 Natural Convection from Vertical Plates with Semicircular Leading Edges (79-HT-104) (A) **N 108**  
 A Numerical Investigation of Thermal Convection in a Heat-Generating Fluid Layer (79-HT-103) (A) **N 108**  
 Numerical Solution of Three-Dimensional Natural Convection by the Strongly Implicit Procedure (78-WA/HT-10) (A) **Mr 93**  
 Numerical Solution of Two-Dimensional Natural Convection in Enclosed Spaces (78-WA/HT-11) (A) **Mr 93**  
 Onset of Convection in Fluid Layers with Nonuniform Volumetric Energy Sources (79-HT-100) (A) **N 107**  
 Steady Thermal Convection from a Concentrated Source in a Porous Medium (79-HT-69) (A) **N 104**  
 Three-Dimensional Thermal Convection Produced by Two-Dimensional Thermal Forcing (79-HT-109) (A) **N 108**  
 Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**  
**Convection Flow**  
 Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ap 92**  
 Wave Instability of Mixed Convection Flow on Inclined Surfaces (79-HT-105) (A) **N 107**  
**Convective Cooling**  
 Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling (79-HT-60) (A) **N 104**  
**Convective Heat Transfer**  
 Studying the Convective Heat Transfer from a Building Model with Infrared Camera Techniques (78-WA/HT-58) (A) **Mr 97**  
**Convective Heating**  
 Ignition of Pyrolyzing Media under Convective Heating (79-HT-27) (A) **O 94**  
**Convective Transport**  
 A Quadratic Finite Element for the Three-Dimensional Convective-Transport Equation (79-HT-50) (A) **N 103**  
**Conversion**  
 Conversion of Industrial Plants to use Coal as Fuel **Je 26**  
**Conversion Means**  
 Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Je 91**  
**Conversion Method**  
 What To Do When You're Out of Hay (BTR) **Ap 54**  
**Conversion Process**  
 Ocean Thermal Energy Conversion (EN) **O 64**  
**Conversion Program**  
 Heat Exchangers for OTEC (ES) **My 20**  
**Conversion Progress**  
 U.S. Metric Board Chief Calls Dual System "Intolerable" (NR) **Je 63**  
**Conversion Study**  
 Environmental Effects of Burning Wastes (BTR) **S 61**  
**Conversion Systems**  
 Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Je 101**  
 A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-62) (A) **Je 92**



A Comprehensive Energy Analysis Applied to and Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 128**

Converting Coal to Liquid/Gaseous Fuels **Je 34**

Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**

Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Enr-6) (A) **Je 93**

A Flywheel Energy Storage and Conversion System for Solar Photovoltaic Applications (79-Sol-1) (A) **Ag 92**

Geopressured Water/Gas as Potential Energy Source (BTR) **Ap 48**

Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ji 97**

Needed: Bright Ideas! (ES) **My 21**

Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Ji 98**

Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**

**Conversion Techniques**

Aloha OTEC (ES) **Ap 21**

**Converter Fuel Cycles**

A Comparative Assessment of the LMFBR and Advanced Converter Fuel Cycles (79-JPGC-NE-3) (A) **D 96**

**Converter System**

Wind/Water Energy Converter (BTR) **My 48**

**Converters**

High-Temperature Solar Converter (BTR) **Je 44**

LD-OB Process (IF) **D 67**

**Conveyor Belting**

High-Tension Straightwrap Conveyor Belting (BTR) **My 54**

**Conveyors**

Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**

Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MH-7) (A) **My 98**

**Convocation**

A Give-and-Take Session at WAM (CC) **F 79**

**Cook, C.** Heat Transfer from Heat Generating Molten UO<sub>2</sub>: Interpretations of the Available Experimental Data (79-HT-115) (A) **N 108**

**Cook, C. J.** Storage and Regeneration of High Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

**Cook, D. R.** Improving Productivity Through Efficient Engineering Management **Je 27**; Improving Productivity Through Engineering Administration (78-WA/Mgt-3) (A) **Je 91**

**Cook, M. E.** Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**

**Cook, T. S.** Development of an Automated Life Prediction System for Steam Turbine Rotors (78-WA/DE-15) (A) **Mr 86**

**Cookson, R. A.** A Fibre-Optic Laser-Doppler Probe for Vibration Analysis of Rotating Machines (79-GT/Isr-11) (A) **O 83**

**Coolant**

Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Ji 104**

Lithium Metal for Fusion (ES) **Ji 21**

**Coolant Air Inlet Conditions**

The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Je 108**

**Coolant Channels**

Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-28) (A) **Ji 90**

**Cooling**

Application of Ion-Drain Air Jets to Augment Airborne Equipment Cooling (79-ENAs-12) (A) **O 87**

Award-Winning Passive Solar House (BTR) **Je 47**

Cooling a Radioisotope Power Source in the Space Shuttle Orbiter (79-ENAs-44) (A) **O 90**

Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**

Geothermal Power and Water Production Studies at the University of California (78-WA/Enr-7) (A) **Je 93**

Ice Source Heat Pumps (ES) **Ji 21**

Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Ji 93**

Magnetic Heat Pump (BTR) **Je 48**

Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Je 96**

Pre-Insulated Panel, U Factors, and Energy Use (BTR) **My 52**

Sensitization Kinetics in Type 304 Stainless Steel (79-PVP-85) (A) **S 99**

Solar Energy Index (NB) **S 71**

Solar-Powered Home Air Conditioning (BTR) **Ji 48**

Summer Cooling with Winter Ice (BTR) **D 55**

Temperatures of EBS-11 Subassemblies in Air or Argon without Forced Cooling (79-HT-7) (A) **O 91**

**Cooling Applications**

Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**

**Cooling Concept**

Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Enr-2) (A) **Je 92**

**Cooling Energy**

Home Heat and Hot Water from Ice (BTR) **Ap 46**

**Cooling Methods**

Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/TM-2) (A) **F 131**

**Cooling Passages**

Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Ji 90**; **Ag 98**

**Cooling Research**

Improving Turbine Component Efficiency (79-GT-176) (A) **Ji 102**

**Cooling Systems**

Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 96**

Applying Plastics in a Highly Reliable, Low Cost Cooling System (78-DE-W-3) (A) **F 129**

Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji 93**

Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**

Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**

Home Sweet Solar Home! (ES) **My 21**

Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Je 94**

Solar Factors (C) **Ap 43**

Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Je 96**

Vibration of Nuclear Power Plant Primary Coolant System Piping During Normal Operation (79-DET-28) (A) **N 111**

**Cooling Towers**

Aerodynamics of the Heat Exchangers and Their Arrangement in Large Dry Cooling Towers (78-WA/HT-19) (A) **Ap 91**

Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers (78-WA/HT-18) (A) **Ap 90**

**Cooling Tubes**

Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Ji 99**

**Coomba, M. G.** Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**

**Cooper, D.** The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) **My 95**

**Cooper, R. H.** Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Ji 97**

**Cooper, W. E.** (recipient) Bernard F. Langer Nuclear Codes and Standards Award **Je CR-12**

**Cooperrider, N. K.** Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**

**Copeland, C. T.** Operational Evaluation of Freeze Conditioning Agent: Winter 1978-79 (79-IPC-Fu-3) (A) **D 102**

**Copeland, J. F.** Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) (A) **S 102**

**Copper, D.** (author) Architectural and Engineering

Salesmanship (CB) **Je 104**

**Copying Control System**

Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **Mr 99**

**Coral Reef**

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 138**

**Corbo, M.** Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**

**Core Assembly Refueling**

Influence of Core Assembly Refueling Requirements on LMFBR Core System Design (79-PVP-33) (A) **Ag 106**

**Core Components**

Experience in the Use of FBR Core Component Structural Design Criteria as Applied FFTF (79-PVP-48) (A) **S 97**

Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**

**Core Cooling**

Reactor Vessel Blowdown: Determination of Emergency Core Cooling Parameters (79-HT-83) (A) **N 105**

**Core Design**

Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**

**Core Structural Design**

Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**

**Core Theory**

Finite Extension of an Elastic Strand With a Central Core (78-WA/APM-7) (A) **My 103**

**Cores**

Experimental Assessment of the Effect of Helium Pressure on Heat Transfer in the GCFR Core During a Protected Loss of Flow Accident (79-HT-4) (A) **O 92**

**Coriolis Flow Meter**

Coriolis/Gyroscopic Flow Meter **Mr 36**

**Corner Radius**

The Effect of Corner Radius on Plate-Cylinder Intersections (79-PVP-15) (A) **Ag 104**

**Cornel, F. H.** Comparative Analysis by the Displacement-Discontinuity Method of Two Energy Criteria of Fracture (79-APM-25) (A) **S 107**

**Cornies, D. J.** Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Ji 95**

**Corona Wind Heat Exchanger**

Heat Transfer by a Corona Wind Heat Exchanger (78-WA/HT-43) (A) **Ap 92**

**Corporate Support**

Corporate Support of ASME (Ed) **My 19**

**Corporon, G. P.** Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**

**Correale, J. V.** Evolution of the Shuttle Extravehicular Mobility Unit (79-ENAs-24) (A) **O 88**

**Correspondence Course**

Study-By-Mail (NB) **Ji 85**

**Corriveau, P. J.** Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**

**Corrosion**

Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analysis of Nuclear Reactor Vessels (79-PVP-116) (A) **S 103**

Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**

Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**

**Corrosion Control**

Parameter Monitoring for Corrosion Control in Gas Turbines (79-JPGC-GT-1) (A) **D 96**

**Corrosion and Deposits**

Effect of Composition of Melting Behavior on Coal Ash (78-WA/CD-2) (A) **Je 91**

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**

Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**

The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**

**Corrosion Engineering**

Corrosion Engineering (CB) **O 97**

## Corrosion Failures

Corrosion Failures: Three Case Histories and Their Solutions (78-WA/Aero-23) (A) **Ap 102**

## Corrosion Protection

Gas Turbine Bucket Corrosion Protection Developments (79-GT-47) (A) **Ag 98**

## Corrugated Metal Tube

Transmitting Rotary Motion at an Angle (BTR) **Jl 47**

## Corrugated Surface

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**

Cory, J. S. Nitinol Heat Engines for Low-Grade Thermal Energy Conversion **My 28**

## Cosmological Models

Questioning Cosmological Models (C) **N 56**

Cossar, B. F. J. Compressor Rotating Stall in Uniform and Non-Uniform Flow (79-GT/IR-18) (A) **O 84**

## Cost Comparison

Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**

Industrial Application of a 66,000 lb/hr Vibrating Stoker Fired Boiler (78-IPC-Fu-4) (A) **Ja 91**

## Cost Concern

Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**

## Cost Control

PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Je 91**

## Cost-Effective Regulations

Environmental Laws—Fundamental Tensions (WW) **Ap 70**

## Cost Issue

Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

## Cost Optimization

Cost Optimization Models for Planned Replacement (79-DET-115) (A) **D 107**

Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**

Structural Cost Optimization of Photovoltaic Central Power Station Modules and Support Structure (79-Sol-17) (A) **Ag 94**

## Cost Overview

The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**

## Cost Reduction

Conservationist Award (ES) **F 24**

Standardization as a Means of Reducing Power Plant Costs (79-PVP-106) (A) **S 102**

Costanza, P. A. Electrical Stimulation of Fabric Filtration. (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**

## Cotton Dust Control

Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**

Industry Calls for Cost Reduction through Better Design Engineering **Jl 76**

System May Speed Growth of Solar Energy Storage (BTR) **Ja 55**

## Cotton Fabrics

Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Tex-5) (A) **Ja 92**

## Cotton Fibers

Dust-Trash Removal by the SRRC Tuff-To-Yarn Processing System (78-Tex-2) (A) **Ja 92**

A Phase-Velocity Description of Aerodynamic and Electrostatic Transport of Cotton Fibers and Trash (79-Tex-1) (A) **D 99**

## Cotton-Rich Blended Yarn

Fiber Migration and Characteristics in Open-End Spun Cotton-Rich Blended Yarn (79-Tex-7) (A) **D 100**

Coly, P. J. A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Jl 103**

## Coupled Systems

Normal Mode Uncoupling of Systems With Time Varying Stiffness (79-DET-19) (A) **N 110**

## Coupled Vertical-Lateral Dynamics

Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**

## Coupled Vibration

Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

Coupled Vibrations of Blades in Bending-Bending-Torsion and Disks and Out-of-Plane and In-Plane Motion (79-DET-90) (A) **D 104**

## Coupling

Methods for Modelling Flanged and Curvic Couplings for

Dynamic Analysis of Complex Rotor Constructions (79-DET-65) (A) **N 114**

Spline Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**

Courterelle, L. E. Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Jl 95**

Courtney, C. W. The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Jl 103**

Courtney, W. J. Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/TM-2) (A) **F 131**

Coughlin, J. M. Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**

Coulinho, J. de S. Residual Safety Hazards (78-WA/DE-23) (A) **Mr 87**

Coutures, J. P. Treatment of Molybdenite Ore Using a 2-kW Solar Furnace (79-Sol-22) (A) **Ag 94**

Cover, P. W. Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

Cover Gas Seals

A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) (A) **Mr 87**

Covington, M. T. Pipeline Rupture and Controls (78-Pet-54) (A) **F 126**

Cowie, W. D. Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 90**

Cox, J. J. Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**

Cox, J. T. Investigation of a Pulsatile Flowfield Downstream from a Model Stenosis (78-WA/Bio-6) (A) **Mr 91**

Cozon, M. Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Je 89**

Crabbe, D. (editor) The World Energy Book: An A-Z, Atlas and Statistical Source Book (CB) **Ag 108**

## Crack Extension

Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**

## Crack Formation

Detection of Fatigue Crack Formation in Nozzle Welding of Pressure Vessels (79-PVP-101) (A) **S 102**

## Crack Growth

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) (A) **S 102**

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90**

Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**

## Crack Growth Behavior

Effects of Heat Treatment on Elevated Temperature Fatigue-Crack Growth Behavior of Two Heats of Alloy 718 (78-WA/PVP-3) (A) **My 95**

## Crack Growth Resistance

Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

## Crack Identification

Identification of Cracks in Circular Plates Welded at the Contour (79-DET-106) (A) **D 106**

## Crack Propagation

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Jl 99**

The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-83) (A) **S 100**

A New Computer Code for the Estimation of the Probability of Failure of PWR Pressure Vessels (79-PVP-118) (A) **S 103**

## Crack Shape Evolution

Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**

## Cracking

An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**

Investigation of Characteristic Damage States in Composite Laminated (78-WA/Aero-4) (A) **Ap 100**

Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**

## Cracks

Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analysis of Nuclear Reactor Vessels (79-PVP-116) (A) **S 103**

A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) (A) **Je 93**

Craft, W. J. The Investigation of Locomotive Dynamics via a Large Degree of Freedom Modeling (79-RT-1) (A) **Ag 96**

Design of a Crack Growth Based Structural Maintenance System (79-PVP-95) (A) **S 101**

Dynamic Propagation of Circumferential Cracks in Two Pipes with Large-Scale Yielding (79-PVP-81) (A) **S 99**

Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) (A) **S 99**

The Enriched Element for Finite Element Analysis of Three-Dimensional Elastic Crack Problems (79-PVP-88) (A) **S 100**

Estimation of Stress Intensity Factors for Embedded Irregular Cracks Subjected to Arbitrary Normal Stress Fields (79-PVP-90) (A) **S 100**

Experimental Study of Fatigue Crack Initiation Due to Rapid Thermal Cycling in Pressure Vessel Steels (79-PVP-109) (A) **S 102**

Fatigue Crack Growth in 2 1/2Cr-1Mo Steel Exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**

Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) (A) **S 102**

Influences of Flaw Shapes on Stress Intensity Factors for Pressure Vessel Surface Flaws and Nozzle Corner Cracks (79-PVP-65) (A) **S 98**

The Interface Crack in a Combined Tension-Compression and Shear Field (79-APM-23) (A) **S 107**

Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**

Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**

Part-Elliptical Cracks Emanating from Open and Loaded Holes in Plates (78-WA/Mat-4) (A) **Mr 90**

Relationships Between Mechanical Properties and the Extension and Arrest of Unstable Cracks in Line Pipe Steels (79-PVP-76) (A) **S 99**

Small-Scale Yielding at the Tip of a Through-Crack in a (A) **S 100**

Crandall, S. H. Wide-Band Random Axisymmetric Vibration of Cylindrical Shells (79-APM-13) (A) **S 106**

## Crash Resistant Transport Package

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**

Crawford, A. R. Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**

## Creative Abilities Measured

Are You Creative? (PS) **Jl 72**

## Creativity Measurement

Creative Confusion (C) **O 41**

Creswell, W. J. A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**

## Creep

Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation (79-PVP-119) (A) **S 103**

Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous Viscoelastic Model (78-WA/APM-3) (A) **My 103**

Inelastic Bending of Beams under Time-Varying Moments—A State Variable Approach (79-PVP-82) (A) **S 100**

## Creep-Addition Function

Similarity Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**

## Creep Buckling

Creep Buckling of Spherical Shells Using a Comparative Stress Method (79-PVP-3) (A) **Ag 103**

## Creep Forces

Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**

## Creep Surface

Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**

Creese, R. C. A Primal-Dual Solution Procedure for Geometric Programming (79-DET-78) (A) **N 116**

**Creswick, F. A.** Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory (78-WA/Fu-1) (A) **Je 96**

#### **Crimp Stabilization**

Stabilization of Crimp in Bulk Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Text-11) (A) **Ja 92**

**Crippa, R. A.** Design and Fabrication of Petrobas Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**

**Criqui, A. F.** Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Subsynchronous Vibration (79-GT-86) (A) **Ji 95**

**Crisp, J. N.** Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**; Pressure Distribution from Experimental Data for Elastohydrodynamic Point Junctions (78-Lub-3) (A) **Ja 93**

#### **Critical Heat Flux**

Effect of Contaminants on Critical Heat Flux at Low Pressures (79-HT-72) (A) **N 104**

#### **Critical Point**

Viscosity of Nitrogen Near the Critical Point (78-WA/HT-38) (A) **Ap 91**

#### **Critical Speeds**

Sensitivity of the Critical Speeds of Rotor to Changes in the Design (79-DET-54) (A) **N 114**

**Cronenberg, A. W.** A Prediction of the Minimum Film Boiling Conditions for Spherical and Horizontal Flat Plate Heaters (79-HT-45) (A) **N 102**

#### **Cropping Machine**

Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**

#### **Cross-Channel Service**

Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **Ag 97**

#### **Cross-Linked Polymers**

Stabilization of Crimp in Bulk Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Text-11) (A) **Ja 92**

#### **Cross Reinforcement**

Cross Reinforcement in a GR/EP Laminate (78-WA/Aero-7) (A) **Ap 100**

#### **Cross-Section Shapes**

A Technical Theory of Dynamical Torsion for Beams of any Cross-Section Shapes (79-DET-59) (A) **N 114**

#### **Cross-Ventilation**

Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 89**

#### **Crossflow Heat Exchanger**

The Effect of the Longitudinal Heat Conduction and the Flow Nonuniformity on the Thermal Performance of Crossflow Heat Exchanger (78-WA/HT-51) (A) **Mr 96**

#### **Cross-Sectional Fiber Measurements**

Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Text-1) (A) **Ja 92**

**Crouse, J. E.** An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Je 98**

#### **Crude Oil**

Burning Crude Oil Without Pollution (BTR) **D 81**

An Oil Bonanza (ES) **N 33**

#### **Crude Oil Reserves**

Stretching Our Crude Oil Reserves **S 79**

#### **Crude Oil Storage**

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 128**

#### **Cruise Missiles**

Environmental Control System Design for the Tomahawk Cruise Missile (79-ENAs-7) (A) **O 86**

**Cruise, T. A.** A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**

#### **Cryogenic Plant**

Cryogenic Plant for Fusion Research (IF) **Ji 55**

#### **Cryogenics**

Cryogenics: Applications Unlimited (BTR) **Ji 50**

A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**

#### **Crystallization**

Power Characteristics of a Continuous Crystallization Latent Heat Recovery System (79-Sol-21) (A) **Ag 94**

**Cullen, J. T.** The Stolz and ASME-AGA Orifice Equations Compared to Laboratory Data (78-WA/FM-2) (A) **Mr 82**

#### **Cultural Revolution**

Update: Mechanical Engineering Education in the People's Republic of China **O 36**

#### **Cumulative Damage**

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Ji 99**

#### **Cumulative Damage Model**

A New Cumulative Damage Model—Part 3 (78-WA/AFM-19) (A) **My 104**

#### **Cumulative Fatigue Damage Model**

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**

**Cunningham, R. E.** Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-88) (A) **N 117**; Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Ji 100**

#### **Cure Time Restrictions**

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) (A) **Mr 90**

**Curtis, R. D.** New Locomotive Hauled Push-Pull Computer Cars for Massachusetts Bay Transportation Authority (79-RT-2) (A) **Ag 96**

**Curtis, R. H.** Demonstration of Fuel Conservation in High Temperature Industrial Furnaces (78-WA/Ener-8) (A) **Je 92**

#### **Curvature Function**

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**

#### **Curvatures**

Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**

#### **Curve-Averaging Instrument**

Real-Time Instrument Averages 100 Data Sets (BTR) **S 54**

#### **Curved Elastic Tube**

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**

#### **Curved Members**

Static and Dynamic Analysis of Space Frameworks with Curved Members (79-PVP-97) (A) **S 101**

#### **Curved Pipes**

Heat Transfer for Laminar, Uniform Heat Generating Fluid Flow in a Curved Pipe (79-HT-93) (A) **N 107**

#### **Curved Rectangular Channels**

An Experimental Study of the Secondary Flow in a Curved Rectangular Channel (79-FE-6) (A) **O 85**

#### **Curved Surfaces**

Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**

#### **Curves**

Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves (78-WA/RT-13) (A) **My 93**

Interaction Curves as a Tool in Optimization and Decision Making (79-DET-3) (A) **N 109**

#### **Curvic Couplings**

Methods for Modeling Flanged and Curvic Couplings for Dynamic Analysis of Complex Rotor Constructions (79-DET-65) (A) **N 114**

#### **Cuts**

Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 99**

#### **Cutter Offset**

A Study to Determine Roller Cone Cutter Offset Effects at Various Drilling Depths (78-Pet-23) (A) **Ja 99**

#### **Cutting**

Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**

#### **Cutting Forces**

Effects of Al<sub>2</sub>O<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**

#### **Cutting Performance**

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance Multipasses (78-WA/Prod-11) (A) **My 102**

#### **Cutting Process**

On the Mechanism of Chip Breaking (78-WA/Prod-21) (A) **My 100**

#### **Cutting Signal**

Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**

#### **Cutting Speed**

Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**

#### **Cutting Tools**

Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Je 90**

Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**

#### **Cutting Torque**

Gear Hobbing Torque and Power (78-WA/Prod-33) (A) **My 101**

#### **Cycle Power Use**

Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **Ji 105**

#### **Cyclic Duty Models**

Design and Operation of Large Fossil-Fueled Steam Turbines Engaged in Cyclic Duty (79-JPGC-Pwr-7) (A) **D 97**

#### **Cyclic Loadings**

Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBR Pressure Vessels (79-PVP-59) (A) **S 98**

#### **Cyclic Operation**

Cycling Operation of Fossil Fuel Power (79-JPGC-Pwr-5) (A) **D 97**

Design and Application of Feed-Water Pumping Equipment for Improved Availability in Cyclic Operation (79-JPGC-Pwr-8) (A) **D 97**

#### **Cyclic Rotations**

Two or More Rotary Outputs From One Input (BTR) **Je 55**

#### **Cycling Duty**

Electrostatic Precipitator's Performance in Cycling Duty (79-JPGC-Pwr-6) (A) **D 96**

#### **Cycling Performance**

Variable-Pressure Operation and External Turbine Bypass Systems to Improve Power Plant Cycling Performance (79-JPGC-Pwr-9) (A) **D 98**

#### **Cyclone Chambers**

Numerical Computation of Turbulent Flow Structure in a Cyclone Chamber (79-HT-31) (A) **O 94**

#### **Cylinder Cutoffs**

The Influence of Cylinder Cutoff on Fuel Consumption and Emissions of Diesel Engines (78-DGP-13) (A) **Ja 87**

#### **Cylinder-to-Cylinder Interaction**

Finite Element Analysis of a Cylinder-to-Cylinder Interaction (79-PVP-64) (A) **S 98**

#### **Cylinder Firing Pressure**

An Accelerated Durability Test Program for Diesel Truck Engines (78-DGP-23) (A) **Ja 88**

#### **Cylinder Pressures**

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**

Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 89**

#### **Cylinders**

An Analytical Study of Heat Transfer to a Horizontal Cylinder in a Large Particle Fluidized Bed (79-HT-78) (A) **N 105**

Combined Convective Heat Transfer From Vertical Cylinders in a Horizontal Flow (78-WA/HT-45) (A) **Mr 96**

Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 86**

Damping and Hydrodynamic Mass of a Cylinder in Simulated Two-Phase Flow (79-DET-81) (A) **D 104**

Dynamics of Flexible Cylinders Axisymmetrically Confined Axial Flow (78-WA/AFM-24) (A) **My 105**

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OGE-1) (A) **F 130**

A Model of MHD Natural-Convection Heat Transfer from a Finite Cylinder (78-WA/HT-24) (A) **Mr 95**

Natural Convection between Spheres and Cylinders (79-HT-111) (A) **N 108**

Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Je 89**

Vortex Motions Induced by V-Grooved Rotating Cylinders and their Effect on Mixing Performance (79-FE-2) (A) **O 84**

#### **Cylindrical Collectors**

Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Je 94**

#### **Cylindrical Panels**

Cylindrical Panels of Various Shapes for Pressure Vessels (79-PVP-110) (A) **S 102**

#### **Cylindrical Receiver**

Investigation of the Heat Transfer in Cylindrical Receiver



Configurations with Inner Tubes (79-GT-64) (A) **Jl 93**

#### **Cylindrical Roller Bearings**

Dynamics of Rolling-Element Bearings Part 1: Cylindrical Roller Bearing Analysis (78-Lub-25) (A) **Ja 95**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) **Ja 96**

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**  
An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**

#### **Cylindrical Shells**

Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) (A) **Ag 103**

Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**

Design of Radial Nozzles in Cylindrical Shells for Internal Pressure (79-PVP-14) (A) **Ag 104**

Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) (A) **Ag 104**

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) (A) **Mr 86**

A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **My 96**

Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104**

#### **Cylindrical Surfaces**

Effects of Al<sub>2</sub>O<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**

#### **Cylindrical Vessels**

Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

Czerwinski, F. H. Characteristics of a Dry, Subsea Well Completion (78-Pet-41) (A) **F 124**

## **D**

#### **Dacron®/Orlon® Fabrics**

Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Tex-5) (A) **Ja 92**

Dahlborg, R. C. HTGR Strategy for Reduced Proliferation Potential (78-WA/NE-11) (A) **Mr 89**

Dahlot, W. Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**

Dakin, J. T. The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 99**

Dale, J. EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-18) (A) **Ja 98**

Dalton, C. Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**

#### **Dam Abutts**

Ultimate Wave Machine (BTR) **Ag 44**

#### **Damage Assessment**

Three Mile Island—A Damage Assessment (ES) **Je 19**

#### **Damage Protection Effectiveness**

Seismic Building Isolation Systems: Better Protection Against Earthquake Damage (79-PVP-54) (A) **S 96**

#### **Damage States**

Investigation of Characteristic Damage States in Composite Laminated (78-WA/Aero-4) (A) **Ap 100**

#### **Dampening**

Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**

#### **Damper Slug**

The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) (A) **Mr 84**

#### **Dampers**

Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-98) (A) **N 117**

An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Je 98**

Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ja 98**

#### **Damping**

Composite Modal Damping in Structures (79-PVP-71) (A) **S 99**

The Control of Structural Vibration by Frictional Damping in Electro Discharge Machined Joints (79-DET-79) (A) **N 116**

Damping and Hydrodynamic Mass of a Cylinder in Simulated Two-Phase Flow (79-DET-81) (A) **D 104**

The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**

Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**

#### **Damping Factors**

An Experimental Study of First-Phase Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**

#### **Damping Synthesis**

A Method of Damping Synthesis From Substructure Tests (79-DET-11) (A) **N 109**

#### **Damping Treatment**

Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Jl 101**

Daniel, J. Resource Utilization and Design Aspects of the Heavy Water Reactor (78-WA/NE-7) (A) **Mr 88**

Daniels, A. The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Enr-4) (A) **Je 92**

Daniels, E. J. The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**

Dannenmaier, J. H. Those Treacherous Continuous Plots (78-Pet-45) (A) **F 124**

Dantini, E. M. Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**

#### **Dapores, J.**

A Matter of Survival (C) **O 41**

Darling, D. W. Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 98**

Darlow, M. S. Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-88) (A) **N 117**. The Effects of Strain and Temperature on the Dynamic Properties of Elastomer (79-DET-57) (A) **N 115**; Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Jl 100**; Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**; An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Jl 101**; Nonsynchronous Vibrations Observed in a Supercritical Power Transmission Shaft (79-GT-146) (A) **Ag 100**

Darnell, J. R. Geothermal Power and Water Production Studies at the University of California (78-WA/Enr-7) (A) **Je 93**

Das, D. Design Considerations in the Coupling of Shaft-Disk Systems by Interference Fits (79-DE-6) (A) **Ag 101**

Das, M. K. Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**

Das-Gupta, S. Stresses in Adhesive Lap Joints with Pre-Bend Adherends (79-DET-105) (A) **D 106**

#### **Data Acquisition**

On the Film Cooling Effectiveness Controversy (79-GT-27) (A) **Jl 90**

#### **Data Acquisition System**

Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**

#### **Data Analysis**

Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**

#### **Data Compilation**

MHD Test Record (ES) **Jl 21**  
Transportation Energy Trends (BTR) **Jl 41**

#### **Data Correlation**

The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Jl 98**

#### **Data Dependent Systems**

Application of Data Dependent Systems to Diagnostic Vibration Analysis (79-DET-9) (A) **N 109**

#### **Data Presentation**

Corrosion Engineering (CB) **O 97**

#### **Data Processing**

Development of Method for Determining Emissivities and

Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**

#### **Fuel Optimization (ES)**

Utilization of Computer Techniques in Analyzing Production Trend Problems (78-WA/Aero-16) (A) **Ap 101**

Daudet, H. C. Closed Cycle Gas Turbines, An ECAS Update: Part 1 (79-GT-204) (A) **Ag 100**

Davino, R. Mean Velocity and Decay Characteristics of the Guidvane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**

Davis, J. L. An Analysis of the Thermodynamic Problem in a Slab (79-HT-59) (A) **N 103**

Davis, P. E. Please Note... (C) **O 41**

Davis, R. L. A Quadratic Finite Element for the Three-Dimensional Convective-Transport Equation (79-HT-50) (A) **N 103**

Davis, R. P. Experimental Study of Fatigue Crack Initiation Due to Rapid Thermal Cycling in Pressure Vessel Steels (79-PVP-109) (A) **S 102**

Davis, R. W. Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters (78-WA/FM-4) (A) **Mr 92**

Davis, W. J. Optimization of Die Profiles for Deep Drawing (79-DET-1) (A) **N 109**

Dawson, B. E. Conceptual Design of Large Heat Exchangers for Ocean Thermal Energy Conversion (78-WA/HT-32) (78-WA/HT-32) (A) **Mr 95**

Dawson, W. F. Coal Combustion (C) **O 42**

Day, W. H. System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Jl 92**; Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Jl 93**

Dean, T. A. Die Temperatures During Production Drop Forging (78-WA/Prod-28) (A) **My 100**

#### **Debugging Machinery**

Debugging Through Data Analysis (BTR) **Ja 51**

#### **Decay Characteristics**

Mean Velocity and Decay Characteristics of the Guidvane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**

Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Jl 104**

#### **Decision Making**

Interaction Curves as a Tool in Optimization and Decision Making (79-DET-3) (A) **N 109**

Decker, R. L. FP-1—A Microcomputer Language for Controlling Hydraulic Systems (78-DE-W-1) (A) **F 12**

128: A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**

#### **Decommissioning**

Decommissioning of Nuclear Plants (BTR) **N 61**

#### **Decomposition**

Large System Optimization Using Decomposition with Soft Specifications (79-DET-99) (A) **D 105**

#### **Decompression**

Bubble Growth During Decompression of a Liquid (79-HT-73) (A) **N 104**

Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**

#### **Decontamination**

Decontaminating Reactor Components (BTR) **Mr 48**

DeCorso, S. M. Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ag 100**; Preliminary Design Analysis of a Catalytic Structure in a Turbine Combustor (78-WA/GT-10) (A) **Ap 89**

Decrisantia, A. A. Shuttle Orbiter Flash Evaporator (79-ENAs-14) (A) **O 87**

#### **Deep Drawing**

Optimization of Die Profiles for Deep Drawing (79-DET-1) (A) **N 109**

#### **Deep Ocean Systems**

Design for Remote Work in the Deep Ocean (78-WA/OCE-4) (A) **F 130**

#### **Deep Water Platforms**

Offshore Technology Conference—Another World (NR) **Jl 56**

#### **Deepwater Pipeline**

Metallurgical Studies of Deepwater Pipeline Laid by Reeled Pipe Method (78-Pet-55) (A) **F 126**

#### **Deepwater Production Risers**

Deepwater Production Risers (78-Pet-13) (A) **F 122**

Deess, D. A. author Nuclear Power and Radiactive Waste: Sub-Seabed Disposal Option? (CB) **Ap 104**



## Deformation

- Application of Hamilton's Principle to Large Deformation and Flow Problems (79-APM-18) (A) **S 107**
- Axisymmetric Bending of Annular Plates (78-WA/PM-27) (A) **Je 93**
- Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**
- Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and Its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 191**
- Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**
- Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**
- Elastic Deformation of Ball Bearings, Gears, and Cams (BTR) **Ji 42**
- Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/PM-1) (A) **My 102**
- Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**
- On the Hardening Response in Small Deformation of Metals (78-WA/PM-17) (A) **My 104**
- Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**
- Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**
- For Spring Materials: A Simple Test of Stress Relief Annealing **F 38**
- Deformation Analysis**
- Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**
- DeFur, D. D.** A High Reliability Straight Tube LMFBR Steam Generator Design (79-NE-4) (A) **S 104**; An IHX Design for Pool Type LMFBR System Application (79-NE-3) (A) **S 104**
- Degli Esposti, P. L.** Evolutionary Possibilities of the Spacecraft Thermal Control Systems Towards Space Stations (79-ENAs-11) (A) **O 87**
- Degree Programs**
- Joint Degree Program (EN) **Je 88**
- Ph. Details (C) **O 40**
- De Hoff, R. L.** Optimal Control of Turbine Engines (78-WA/DSC-33) (A) **Ap 99**
- Dehydration Process**
- Application of Solar Energy to Continuous Belt Dehydration (79-Sol-27) (A) **Ag 95**
- Dell, L. N.** Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Je 96**
- Delamination**
- An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites (78-WA/Aero-8) (A) **Ap 101**
- Defosse, G. C.** Aseismic Building Isolation Systems: Better Protection Against Earthquake Damage (79-PVP-54) (A) **S 96**
- Deik, S. R.** Applications for Computers in Industrial Powerhouses (79-IPC-Pwr-6) (A) **D 101**
- Demonstration Project**
- LILCO Pushes Electric Vehicles (NR) **F 67**
- DeMuth, R. S.** Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Ji 92**
- de Neeve, P. F. W.** A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**
- de Nevers, N.** Prevention of Significant Deterioration (78-TS-3) (A) **F 129**
- Department of Energy (DOE)**
- Aloha OTEC (ES) **Ap 21**
- Another Go at Oil Shale (ES) **S 21**
- Call for Conservation from DOE (C) **Ap 44**
- Cascading Solar Cells May Increase Efficiencies (BTR) **Ap 47**
- Cheap Hydrogen (ES) **Ji 21**
- Coal-Feeding Systems (ES) **Ap 21**
- Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Ji 100**
- Dynamics and Control Workshop, preview (NR) **My 64**
- Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**
- Electric Load Management (ES) **O 18**
- The Energy Game (NB) **S 71**
- On Energy Invention Funding (C) **Ji 38**

## Energy Technologies (ES) Ap 21

- Evaluate Satellite Power Systems (BTR) **O 47**
- Evaluating Wind Power (ES) **F 25**
- Expand Sun-Powered Irrigation (BTR) **Ji 45**
- Expanding Horizons (ES) **S 20**
- Fusion Program (EN) **My 76**
- Geothermal Comes East (ES) **My 20**
- Glad Tidings! (ES) **Ja 18**
- Heat Exchangers for OTEC (ES) **My 20**
- Home Heat and Hot Water from Ice (BTR) **Ap 48**
- Hot Competition! (ES) **My 20**
- The Hybrid Car (ES) **Ji 20**
- MHD Generator Runs 500 Hours (NB) **Ji 85**
- MHD Subsystem (ES) **O 19**
- 1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**
- Needed: Bright Ideas! (ES) **My 21**
- Needed: New Oil Shale Processes (ES) **S 20**
- New Environmental Sciences Laboratory at ORNL (EN) **Je 88**
- New Prospects for Shale Oil (ES) **Ap 20**
- Overview of Coal Liquefaction in the U. S. Department of Energy (79-PVP-45) (A) **S 96**
- Partners in Fusion (ES) **S 20**
- PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Je 91**
- Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**
- Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**
- Re-producing (NB) **S 71**
- Snake River Exploration (ES) **My 21**
- Solar Energy Index (NB) **S 71**
- Solar Energy Research Proposals Wanted by DOE (EN) **D 76**
- Ten-Megawatt Solar Facility (ES) **F 25**
- Think Small (ES) **My 20**
- Wind Machines Alive and Well (ES) **Ja 18**
- Depressurization**
- Depressurization of Internally Heated Boiling Pools (79-HT-101) (A) **N 107**
- An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **Mr 95**
- Deposition Rates**
- Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 88**
- Derham, C. J.** The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-56) (A) **S 98**
- Derotation Prism**
- Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) (A) **Ja 96**
- Desai, A. R.** Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**
- Design Aids**
- Computer Design Aid (ES) **O 18**
- A Generalized Torsion Spring Design Method (78-DET-82) (A) **Ja 90**
- Design Analysis**
- Management of the Product Liability Engineer (78-WA/Mgt-4) (A) **Je 90**
- A National Park Story (ES) **Ji 21**
- Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) (A) **Ap 89**
- Design Application**
- Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Ji 94**
- Design Assessment**
- An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**
- Design Audit**
- Design Audit, Testing and Commissioning of Two 900 HP Centrifugal Air Compressor Trains (78-Pet-48) (A) **F 125**
- Design Audit Concept**
- The Design Audit Concept in New Product Development (78-DE-W-2) (A) **F 128**
- Design Automation**
- Failure Prevention, Vibration Analysis, and Design Automation **N 89**
- Design Award**
- Award-Winning Factory-Produced Building (BTR) **S 56**

## Design Changes

- Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-198) (A) **Ji 104**
- Design Characteristics**
- Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**
- Design Codes**
- Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure (78-Pet-16) (A) **Ja 96**
- Design Competition**
- Equipment Design Competition for Waste Refuse (EN) **Ja 80**
- Design Concepts**
- Applications of Electro-Chemical Combustion Oxygen Analyzer (78-IPC-Pwr-3) (A) **Ja 91**
- Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers with Position Feedback (78-WA/DSC-3) (A) **Ap 93**
- Coal Preparation and Handling for a Mine-Mouth Power Station: Design Concepts and Operating Experience (79-JPGC-Pwr-3) (A) **D 97**
- New Design Concepts in Safety of Tractor-Trailers (78-DET-83) (A) **Ja 90**
- New Rankine-Cycle Engine Design (EN) **D 77**
- Optimal Control Concepts for the Characterization and Design of Highway Vehicle-Trailer Systems (78-WA/DSC-27) (A) **Ap 96**
- Design Considerations**
- Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**
- Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Ji 93**
- Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**
- Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Ji 90**
- Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**
- Design Contest**
- Ten Designers Cited for Energy-Efficient Buildings (NR) **F 66**
- Design Criteria**
- Basics of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**
- Deepwater Production Risers (78-Pet-13) (A) **F 122**
- Experience in the Use of FBR Core Component Structural Design Criteria as Applied FFTF (79-PVP-48) (A) **S 97**
- Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**
- Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC-Fu-3) (A) **Ja 91**
- A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**
- Design Defects**
- ASME Case Problem—Design Defect in a Leaf Spring (78-WA/DE-18) (A) **Mr 96**
- Corrosion Failures: Three Case Histories and Their Solutions (78-WA/Aero-23) (A) **Ap 102**
- Design Development**
- Air-Storage Gas-Turbine Plant (IF) **S 64**
- A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-62) (A) **Ji 92**
- The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 89**
- The Development of the Olympus "C" Gas Generator (79-GT-122) (A) **Ji 97**
- The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**
- Fusion Center (ES) **My 21**
- Models for Software Reliability (78-WA/Aero-18) (A) **Ap 101**
- Physical Metallurgy and the Design of Steels (CB) **My 107**
- Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Ji 95**
- The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ji 96**
- Soot and the Combined Cycle Boiler (79-GT-67) (A) **Ji 93**
- System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**
- Design Efficiency**
- The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**
- Improved Transformer Efficiency (ES) **O 19**

## Design Engineering

- Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **J1 104**
- Accurate Reduction of Stiffness and Mass Matrices for Vibration Analysis and a Rationale for Selecting Master Degrees of Freedom (79-DET-18) (A) **N 110**
- A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **J1 105**
- America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA-TS-2) (A) **Je 94**
- Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**
- The Analysis of an Elastic Four-Bar Linkage on a Vibrating Foundation Using a Variational Method (79-DET-64) (A) **N 114**
- Analysis of Nonlinear Hunting Vibrations of Rail Vehicle Trucks (79-DET-25) (A) **N 111**
- An Analytic Model for Ball Bearing Vibrations to Predict Vibration Responses to Distributed Defects (79-DET-87) (A) **D 104**
- The Application of Component Mode Synthesis to Covered Groups of Blades (79-DET-92) (A) **D 104**
- Application of Data Dependent Systems to Diagnostic Vibration Analysis (79-DET-7) (A) **N 109**
- Application of Dynamic Programming to Optimize Tool Replacement Schedules for Multi-Tool Operations Involving Distributed Tool Lives (79-DET-4) (A) **N 109**
- Application of Energy Conservation Methods to Industrial Refrigeration Systems (78-IPC-Pwr-5) (A) **Ja 91**
- Application of Extremal Distributors in the Design of Thermal Systems (79-DET-5) (A) **N 109**
- Application of Impact Damping to Rotary Printing Equipment (79-DET-82) (A) **N 116**
- Application of Minicomputers to Finite Element Analysis (79-DET-39) (A) **N 112**
- Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) (A) **Mr 84**
- The Application of the Ritz Averaging Method to Determining the Response of Systems with Time Varying Stiffness to Harmonic Excitation (79-DET-20) (A) **N 110**
- Application of Viscous Analysis to the Design of Jet Exhaust Powered Lift Installations (79-GT/Isr-15) (A) **D 84**
- Applying Plastics in a Highly Reliable, Low Cost Cooling System for Microelectronics (78-DE-W-3) (A) **F 129**
- An Approximate Explicit Solution for Polar Strain of Hydraulically Bladed Circular Diaphragms (79-DET-111) (A) **D 106**
- Are Active Suspensions Really Necessary? (78-WA/DE-12) (A) **Mr 86**
- ASME Case Problem—Design Defect in a Leaf Spring (78-WA/DE-18) (A) **Mr 86**
- Astronomical Observatory Dome Bearing Design (78-WA/DE-19) (A) **Mr 86**
- Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) (A) **Mr 85**
- Award-Winning Passive Solar House (BTR) **Je 47**
- Behaviour of Metallic Safety Rupture Diaphragms Containing Imperfections (79-DET-107) (A) **D 106**
- Calculation of the Geometric Factor Using the Plate Formula for Forged Bevel Gears with a Back Shoulder (79-DE-14) (A) **Ag 102**
- A Case Study in Technology Transfer (78-DET-81) (A) **Ja 89**
- Catalytic Converter Research (EN) **J1 87**
- The Characterization of Cam Drive System Windup (79-DET-24) (A) **N 111**
- Compact Self-Damped Pneumatic Isolators for Road Vehicles (79-DET-101) (A) **D 105**
- Computer-Aided Fatigue Design of Power Transmission Shafts with Strength Constraints Using a Finite Line Element Technique and a Proposed Fatigue Failure Criterion (79-DET-103) (A) **D 106**
- Computational Enhancements to the Method of Multipliers (79-DET-77) (A) **N 116**
- Computer Graphics in Machine Design (79-DE-8) (A) **Ag 101**
- Computer Simulation and Design of the Control System for a Wind Turbine Generator (79-DE-9) (A) **Ag 102**
- Computerized Time Transient Nonlinear Analysis of Power Trains (79-DET-74) (A) **N 116**
- Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-156) (A) **J1 100**
- Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) (A) **Mr 85**

- Contact Problems in Wire Ropes (79-DE-2) (A) **Ag 101**
- A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) (A) **Mr 85**
- The Control of Structural Vibration by Frictional Damping in Electro-Discharge Machined Joints (79-DET-79) (A) **N 116**
- Conversion of Industrial Plants to use Coal as Fuel **J1 26**
- Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**
- Cost Optimization Models for Planned Replacement (79-DET-115) (A) **D 107**
- Coupled Vibrations of Blades in Bending-Bending-Torsion and Disks and Out-of-Plane and In-Plane Motion (79-DET-90) (A) **D 104**
- The Co-Turboshift—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **J1 98**
- Criteria of Force Transmission for Linkages and Their Application for Synthesis (79-DET-2) (A) **N 109**
- Critical Operating Speeds of Constrained Space Linkages Using Spatial Finite Line Element Method and Lumped Mass Systems (79-DET-37) (A) **N 112**
- Damping and Hydrodynamic Mass of a Cylinder in Simulated Two-Phase Flow (79-DET-81) (A) **D 104**
- Defect Location in Structures by a Vibration Technique (79-DET-46) (A) **N 114**
- The Design Audit Concept in New Product Development (78-DE-W-2) (A) **F 128**
- Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **J1 95**
- Design Considerations in the Coupling of Shaft-Disk Systems by Interference Fits (79-DE-6) (A) **Ag 101**
- Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 86**
- On the Design of Ductile Elastic Annular Diaphragms (79-DET-109) (A) **D 106**
- Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-88) (A) **N 117**
- Design of Ellipsoidal and Toroidal Pressure Vessels to Probabilistic Criteria (79-DET-110) (A) **D 106**
- Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**
- Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**
- Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**
- Design Improvement of a Friction Brake Plate Through Finite Element Analysis (79-DE-18) (A) **Ag 103**
- Design of a 150-kW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Je 95**
- Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **J1 104**
- Development of an Automated Life Prediction System for Steam Turbine Rotors (78-WA/DE-15) (A) **Mr 86**
- Development of a Design Procedure for Forged Bevel Gears with a Web (79-DE-13) (A) **Ag 102**
- Developments in Gear Analysis and Test Techniques for Helicopter Drive Systems (79-DE-15) (A) **Ag 102**
- Disc Vibration—Rotating Blade and Stationary Vane Interaction (79-DET-83) (A) **N 117**
- A Distribution-Independent Plotting Rule for Ordered Failures (79-DET-112) (A) **D 106**
- Dynamic Acceptance Test for Machine Tools Based on a Nonlinear Stochastic Model (79-DET-21) (A) **N 110**
- Dynamic Analysis of a Prototype Wheel Balancer (79-DET-72) (A) **N 116**
- Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**
- Dynamic Analysis of Rotating Asymmetric Cross-Section Blade Packet (79-DET-93) (A) **D 105**
- Dynamic Reduction in Rotor Dynamics by the Finite Element Method (79-DET-70) (A) **N 116**
- Dynamic Stability of Pre-Twisted Blades under Lateral Parametric Excitation (79-DET-91) (A) **D 104**
- Dynamically Optimum Design of Rope-Pulley Spacing Mechanism (79-DET-34) (A) **N 112**
- Dynamics of Frame Foundations Interacting With Soil (79-DET-53) (A) **N 114**
- The Dynamics of Rotor-Bearing Systems with Axial Torque—A Finite Element Approach (79-DET-68) (A) **N 115**
- Dynamics Stress Analysis of a Spur Gear Tooth (79-DET-36) (A) **N 112**
- Economic Issues Associated With Machinery and Its Manufacturers (79-DET-52) (A) **N 114**
- Effects of Disk Flexibility on Shaft Whirl Stability

- (78-WA/DE-4) (A) **Mr 84**
- The Effects of Strain and Temperature on the Dynamic Properties of Elastomers (79-DET-57) (A) **N 115**
- Evaluation of Long-Term Aging Effects on Hydraulic Components and Systems (79-DET-104) (A) **D 105**
- Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) **N 115**
- Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**
- Fatigue Life for Small Gear Boxes (79-DET-49) (A) **N 114**
- Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) (A) **My 96**
- Finite Element Analysis of Mindlin Plates (78-WA/DE-6) (A) **Mr 85**
- Finite Element Analysis of Rotating Pretwisted Asymmetric Cross-Section Blades (79-DET-95) (A) **D 105**
- The Five Bar Reciprocating System (79-DE-1) (A) **Ag 101**
- Four Square Gear Box Testing (79-DET-48) (A) **N 114**
- FP/1—A Microcomputer Language for Controlling Hydraulic Systems (78-DE-W-1) (A) **F 128**
- A Further Note on Small-Scale Design Optimization (79-DET-6) (A) **N 109**
- Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Ja 90**
- Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **J1 90**
- A Generalized Torsion Spring Design Method (78-DET-82) (A) **Ja 90**
- Generating Ductile Iron Fatigue Data with a Calibrated Turning Fork System (79-DE-11) (A) **Ag 102**
- Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**
- Global Nonlinear Design Optimization Using Monotonicity Analysis (78-WA/DE-17) (A) **Mr 86**
- The Growth and Evolution of the TPE331 (79-GT-164) (A) **J1 101**
- Head Strength Evaluation of Recessed Threaded Fasteners (79-DET-117) (A) **D 107**
- A High-Speed Time Sharing Rotary Switch (78-WA/DE-20) (A) **Mr 86**
- Identification of Bearing Defects by Spectral Analysis (79-DET-14) (A) **N 110**
- Identification of Cracks in Circular Plates Welded at the Contour (79-DET-106) (A) **D 106**
- Identification of Eigensolutions by Galerkin Technique (79-DET-35) (A) **N 112**
- The Impact of Manufacturing Technology on the Engineering Manager (79-DE-4) (A) **Ag 101**
- In-Core Detection of Nuclear Fuel Assembly Vibration (79-DET-43) (A) **N 113**
- In-Plane Vibration of Annular Disks Using Finite Elements (79-DET-100) (A) **D 105**
- Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **J1 96**
- Influence of Heat Release Distribution on the Acoustic Response of Long Burners (79-DET-31) (A) **N 112**
- Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **J1 97**
- Interactive Computer Methods for Design Optimization (78-DET-84) (A) **Ja 90**
- Interaction Curves as a Tool in Optimization and Decision Making (79-DET-3) (A) **N 109**
- An Investigation of the Early Detection of Defects in Ball Bearings by the Vibration Monitoring (79-DET-45) (A) **N 113**
- The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) (A) **Mr 84**
- Large System Optimization Using Decomposition with Soft Specifications (79-DET-99) (A) **D 105**
- Laser Processing of Plastic Parts (79-DE-17) (A) **Ag 103**
- Liquid Metal Pumps (ES) **Ap 20**
- Loads Moving on Beam Supported by Layered Elastic Foundation (79-DET-15) (A) **N 110**
- Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Ja 89**
- A Man-Machine Interactive Method for the Development of Fatigue Design Equations (79-DET-96) (A) **D 104**
- A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) (A) **Mr 87**
- Marine Condenser Design Using Numerical Optimization (79-DET-98) (A) **D 105**
- A Method of Damping Synthesis From Substructure Tests (79-DET-11) (A) **N 109**

Methods for Modelling Flanged and Curvic Couplings for Dynamic Analysis of Complex Rotor Constructions (79-DET-65) (A) **N 114**

Microcomputer Application in Engineering Design (78-DET-85) (A) **Ja 90**

A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**

A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**

A Mobile Apparatus for Solar Collector Testing (79-DE-5) (A) **Ag 101**

Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**

Moderately Large Amplitude Plate Vibration Modes (79-DET-17) (A) **N 110**

Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) (A) **Ja 90**

Natural Frequencies and Mode Shapes of Multi-Degree-of-Freedom Systems on a Programmable Calculator (79-DET-36) (A) **N 112**

New Design Concepts in Safety of Tractor-Trailers (78-DET-83) (A) **Ja 90**

A New Heuristic for Improving the Efficiency of Numerically Controlled Punch Presses (78-DET-86) (A) **Ja 90**

A New Key and Keyway Design (78-WA/DE-7) (A) **Mr 85**

A New Rapid-Response Hydraulic Actuator-Design, Analysis and Test Results (79-DE-3) (A) **Ag 101**

New Sizing Agent Can Reduce Pollutants (EN) **Ji 68**

Noise Generated from Non-Uniform Clearance of Turbo-Compressors and Fans of Aircraft (79-DET-30) (A) **N 111**

Noise Reduction on Textile Ring-Spinning Frames (79-DET-33) (A) **N 112**

Normal Mode Uncoupling of Systems with Time Varying Stiffness (79-DET-19) (A) **N 110**

Note on Comparison of Nonlinear Optimization Methods (79-DET-118) (A) **D 107**

Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ji 104**

On a New Type of Vibrating Lift (79-DET-23) (A) **N 111**

On a Numerical Method for Solution of the Mathieu-Hill Type Equations (79-DET-22) (A) **N 111**

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

Optimal Design of Helical Springs for Minimum Weight by Geometric Programming (78-WA/DE-1) (A) **Mr 84**

Optimization of Aircraft Undercarriages (79-DET-89) (A) **D 104**

Optimization of Die Profiles for Deep Drawing (79-DET-1) (A) **N 109**

The Optimization of Machine Tool Parameters by Direct Measurement (79-DET-102) (A) **D 105**

Optimization of Two Stage Evaporators for Minimizing Rad-Waste Entrainment (79-DET-26) (A) **N 111**

Optimum Oil Level for Small Gear Boxes (79-DET-50) (A) **N 113**

Optimum Structural Design Under Constraint on Failure Probability (79-DET-114) (A) **D 106**

Optimum Vibration Absorbers for Linear Damped Systems (78-WA/DE-22) (A) **Mr 86**

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) (A) **Mr 86**

Overview of Fuel Element Design **Ap 38**

Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ji 98**

Physical Characterization of Particulate Material from a Turbine Engine (79-GT-179) (A) **Ji 102**

Planet Indexing in Planetary Gears for Minimum Vibration (79-DET-73) (A) **N 116**

A Probabilistic Model of Size Effect in the Fatigue Strength of Rounds in Bending and Torsion (79-DE-16) (A) **Ag 103**

A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**

Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 90**

Project Sunrise (78-WA/Aero-15) (A) **Ap 101**

Proximity Spectra of Oscillators Under Random Excitation (79-DET-80) (A) **N 116**

A Primal-Dual Solution Procedure for Geometric Programming (79-DET-78) (A) **N 116**

A Pseudo-Random Noise Generator for Dynamic Response Testing of Offshore Structures (79-DET-42) (A) **N 112**

R&D Factors and a Proposed National Program for Mechanical Technology (79-DET-66) (A) **N 113**

Realistic Prediction and Control of Vehicle Noise Resulting from Road Inputs (79-DET-75) (A) **N 116**

Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**

Regional Monotonicity in Optimum Design (79-DET-97) (A) **D 105**

Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) (A) **Mr 85**

Reliability Analysis of Truss Structures by Using Matrix Method (79-DET-113) (A) **D 106**

Reliability and Optimal Replacement via Coefficient of Variation (79-DET-108) (A) **D 106**

A Reliable Spline Coupling (78-WA/Aero-11) (A) **Ap 101**

Residual Safety Hazards (78-WA/DE-23) (A) **Mr 87**

The Response of a Hart Machine to Impact Loading Using Finite Elements (79-DET-4) (A) **N 112**

The Response of a Long Cylinder to Lateral Air Blast Loading (79-DET-44) (A) **N 113**

Response Analysis of a General Asymmetric Rotor-Bearing System (79-DET-84) (A) **N 117**

RGP-A Most Effective but Simple Reliability-Assurance Tool (79-DET-116) (A) **D 107**

Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) (A) **Mr 85**

Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Ja 97**

Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (78-WA/DE-2) (A) **Mr 84**

Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**

Sensitivity of the Critical Speeds of Rotor to Changes in the Design (79-DET-54) (A) **N 114**

Signature Analysis for Mechanical Systems via Dynamic Data Systems (DDS) Monitoring Technique (79-DET-10) (A) **N 110**

A Simple Method for Monitoring and Measuring Low Level Vibrations (79-DET-41) (A) **N 112**

Small-Scale Design Optimization Using an Interactive Minicomputer (78-WA/DE-9) (A) **Mr 85**

Some Formulae for the Multiple and Partial Coherence Problem (79-DET-32) (A) **N 112**

Spiral Vibrations Due to the Seal Rings in Turbogenerators Thermally Induced Interaction Between Rotor and Stator (79-DET-61) (A) **N 115**

Spline Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**

Stability Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (79-DET-63) (A) **N 113**

Statistical Analysis of the Influence of Process Variables on Noise Generation in Impact Hot Forming (79-DET-29) (A) **N 111**

Stock Spectrum Ratios Applied to the Comparison of Pulse Signatures (79-DET-8) (A) **N 109**

Stresses in Adhesive Lap Joints with Pre-Bent Adherends (79-DET-105) (A) **D 106**

A Structure-Borne Velocity-Sensing Vibration Controller (79-DET-86) (A) **N 117**

A Study to Determine Roller Cone Cutter Effects at Various Drilling Depths (78-Pet-23) (A) **Ja 99**

A Study of Induction Hardening Hole Surfaces in Clearance Fit Joints to Improve Fatigue Strength (79-DE-10) (A) **Ag 102**

Study of a Vibratory Feeder with Repulsive Surface Having Directional Characteristic (79-DET-27) (A) **N 111**

Subsea Chamber Design for the Dry Containment of Well-head Equipment (78-Pet-43) (A) **F 125**

Surface Function Analysis Using a Desk-Top Calculator (79-DE-7) (A) **Ag 102**

A Technical Theory of Dynamical Torsion for Beams of any Cross-Section Shapes (79-DET-59) (A) **N 114**

The Techniques Involved in the Design, Construction, and Operation of a Waterflood Facility in South Louisiana Marshlands (78-Pet-7) (A) **Ja 97**

Technology Transfer in Biokinematics of Human Spine (78-DET-88) (A) **Ja 90**

Thermal Stress Evaluation of Industrial Brake Drums Using Finite Element and Finite Difference Techniques (79-DE-20) (A) **Ag 103**

Thermionic Power Converters Mechanical Systems (78-DET-74) (A) **Ja 89**

Thermionic Power Converters for Solar Energy (78-DET-74) (A) **Ja 89**

Thermoelastic Generators for Solar Energy Conversions (78-Pet-75) (A) **F 127**

Time-Domain Analysis of Machinery Vibration Signals Using Digital Techniques (79-DET-13) (A) **N 110**

A Torquewhirl Analysis of the Space Shuttle Main Engine High Pressure Turbopumps (79-DET-76) (A) **N 115**

Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**

Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-16) (A) **N 110**

Unbalanced Response of a Large Rotor-Pedestal-Foundation System Using An Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**

Use of a Probabilistic Design of the Maximum Entropy Distribution Based on Ranked Data (79-DET-51) (A) **N 114**

Vibration Analysis of Continuous Systems by Dynamic Discretization (79-DET-12) (A) **N 110**

Vibration Analysis of Turbomachinery Blades Using Dedicated Discretization and Twisted Beam Theory (79-DET-88) (A) **N 117**

Vibration Characteristics of Asymmetric Cross-Section Bladed Disk Under Rotation (79-DET-94) (A) **D 105**

Vibration of Nuclear Power Plant Primary Coolant System Piping During Normal Operation (79-DET-28) (A) **N 111**

The Vibrational Behavior of a Turbine Rotor Containing a Transverse Valve (79-DET-67) (A) **N 115**

Whirling Response and Stability of Flexibly Mounted, Ring-Type Flywheel Systems (79-DET-71) (A) **N 116**

**Design Engineering Organization**

Measurement of Performance in an Engineering Environment (78-WA/Mgt-8) (A) **Ja 91**

**Design Equations Development**

A Man-Machine Interactive Method for the Development of Fatigue Design Equations (79-DET-96) (A) **D 104**

**Design Evaluation**

A Family of Programmable Mechanical Test Systems (BTR) **O 49**

**Design Functions**

Methane Utilization (79-GT-139) (A) **Ji 100**

**Design Guide**

Products Liability and the Reasonably Safe Product: A Guide for Management, Design, and Marketing (CB) **F 134**

**Design Guidelines**

Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**

**Design Handbook**

Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Ji 100**

**Design Improvement**

Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**

Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**

Can Nozzle Design be Effectively Improved for Drilling Purposes (78-Pet-51) (A) **F 125**

Ocean Thermal Plant (BTR) **Ja 51**

**Design Information**

Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ji 98**

**Design Management**

Industry Calls for Cost Reduction through Better Design Engineering **Ji 76**

**Design Method**

Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**

Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) (A) **Ap 89**

**Design Methodologies**

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**

**Design Optimization**

An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Ji 91**

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**

A Further Note on Small-Scale Design Optimization (79-DET-6) (A) **N 109**

Interactive Computer Methods for Design Optimization (78-DET-84) (A) **Ja 90**

Optimum Design of Air-Conditioned Buildings (79-DET-119) (A) **D 107**

The Relationship of Power and Heat Production with



Closed Cycle Gas Turbines (79-GT-103) (A) **Jl 98**  
Small-Scale Design Optimization Using an Interactive Minicomputer (78-WA/DE-9) (A) **Mr 85**

#### Design Parameters

Cogeneration—Some Hardware and System Design Parameters (78-IPC-Pwr-6) (A) **Ja 91**  
Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) (A) **My 97**  
Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery (78-Pet-3) (A) **Ja 97**  
The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions (79-GT-93) (A) **Ag 99**

Real-Time Instrument Averages 100 Data Sets (BTR) **S 54**

#### Design Philosophy

Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**

Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **My 93**

#### Design Planning

Planning Industrial Plant Layouts (IF) **Jl 55**

#### Design Policy

Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Jl 97**

Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**

#### Design Principle

The Value of Intentional Redundancy (C) **Ja 44**

#### Design Procedures

Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Ja 99**  
Panel on Nuclear Safety (ES) **S 21**

#### Design Process

Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (78-PVP-55) (A) **S 97**

#### Design Range

Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Jl 98**

#### Design Requirements

Solar Ponds (IF) **S 65**

#### Design Review

A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Jl 103**

#### Design Solution

Regional Monotonicity in Optimum Design (79-DET-97) (A) **D 105**

#### Design Specifications

Exotic Tiles Solve Shuttle Reentry Problem (BTR) **My 48**

#### Design Study

Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **Jl 105**  
Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Jl 91**

An Energy-Saving Appliance (ES) **Jl 28**

Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Jl 91**

A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Jl 94**

#### Design System

Metric Guide to Mechanical Design and Drafting (CB) **D 96**

#### Design Technique

A New Speed Reducer Design Technique **S 32**  
Optimal Control of Turbine Engines (78-WA/DSC-33) (A) **Ap 99**

Reliability Prediction Techniques for Second Generation Marine and Industrial Gas Turbines (79-GT/Isr-3) (A) **D 82**

#### Design Wave

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 138**

#### Design Working Pressure

Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) (A) **F 138**

#### Desk-Top Calculators

Surface Function Analysis Using a Desk-Top Calculator (79-DE-7) (A) **Ag 182**

Dosha, E. W. Cross Reinforcement in a GR/EP Laminate (78-WA/Aero-7) (A) **Ap 100**

Desalantis, R. Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Jl 90**

#### Desulfurization

Coal Desulfurization Prior to Combustion (CB) **F 135**

deSocio, L. M. Natural Convection in Heat Generating Fluids in Cavities (79-HT-95) (A) **N 107**

Deutsch, I. Renewable Energy Sources (C) **S 50**

#### Deterioration Prevention

Prevention of Significant Deterioration (78-TS-3) (A) **F 129**

#### Developing Nations

Alternative Energy Sources and the Developing Nations (78-WA/TS-3) (A) **Ja 94**

U.S. Engineers Will Aid Developing Nations (NR) **O 59**

DeWitt, D. P. Spectral Emissivity of Ceramics at High Temperatures: Silicon Carbide and Silicon Nitride (79-HT-24) (A) **O 93**

#### Development Concept

A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Jl 102**

#### Development Engineer

Starting Torque Characteristics of Small Aircraft Gas Turbines and APU's (79-GT-95) (A) **Jl 98**

#### Development Method

Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Jl 94**

#### Development Program

Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Jl 92**

Impact of Clinch River Breeder Reactor Plant on Breeder Research and Development Programs (79-JPGC-NE-5) (A) **D 97**

Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Jl 91**

Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Jl 100**

#### Development Stages

The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**

#### Deviation Control Tool

Development of Deviation Control Tool (78-Pet-56) (A) **F 126**

#### Device Description

The Book Ingenious Devices (CB) **D 110**

DeWitt, K. J. Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Ja 88**

DeWitt, R. L. Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 88**

Dhir, V. K. Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**

Dhudshia, V. H. RGP-A Most Effective but Simple Reliability-Assurance Tool (79-DET-116) (A) **D 107**

#### Diagnosis System

Electronic Press Control (IF) **Ja 55**

#### Diagnostic Vibration Analysis

Application of Data Dependent Systems to Diagnostic Vibration Analysis (79-DET-7) (A) **N 109**

#### Diameter Distribution

Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Ja 93**

#### Diamond Wear Rate

Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**

#### Diesel Exhaust Characterization Project

Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project (78-DGP-29) (A) **Ja 88**

#### Diesel Fuel

Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Ja 88**

#### Diesel Fuel Properties

The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) (A) **Ja 88**

#### Diesel and Gas Engine Power

An Accelerated Durability Test Program for Diesel Truck Engines (78-DGP-23) (A) **Ja 88**

Air Consumption and Nitrogen Oxide Emissions of Charge Cooled Engines (78-DGP-12) (A) **Ja 87**

Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives (78-DGP-15) (A) **Ja 87**

Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine (78-DGP-10) (A) **Ja 87**

Compact Diesel Engines in Traction Applications (78-DGP-8) (A) **Ja 87**

Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 86**

Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 88**

The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 88**

Development of Piston Rings for High Speed Engines in Europe (78-DGP-18) (A) **Ja 88**

A Discussion of the TRI-SEN M-300 Electronic Governor and its Possible Impact on Energy (78-DGP-22) (A) **Ja 88**

Distributor Injection Pump, Type VE, Design and Examples for Application (78-DGP-7) (A) **Ja 87**

Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Ja 86**

The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) (A) **Ja 88**

Evaluation of Internal Combustion Engine Valve Trains by an Empirically Tuned Simulation Model (78-DGP-9) (A) **Ja 87**

An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Ja 86**

Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**

The Influence of Cylinder Cutoff on Fuel Consumption and Emissions of Diesel Engines (78-DGP-13) (A) **Ja 87**

Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) (A) **Ja 88**

An Overspeed Test Program in a Petrochemical Plant (78-DGP-27) (A) **Ja 88**

Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System (78-DGP-5) (A) **Ja 88**

Piston Motion Influences, Measurements, Calculations (78-DGP-17) (A) **Ja 87**

Piston Ring Scuffing-A Multi-Parameter Investigation (78-DGP-14) (A) **Ja 87**

Progress in Understanding and Control of Ring Lubrication (78-DGP-25) (A) **Ja 88**

Simulation of a Turbocharged Diesel Engine to Predict the Transient Response (78-DGP-11) (A) **Ja 87**

Some Considerations on the Application of Chain Drives to Diesel Engines (78-DGP-4) (A) **Ja 88**

Sound Power Levels of Large Engines Measured in Semi-Reverberant Environments (78-DGP-20) (A) **Ja 88**

The Special Requirements for Nuclear Application Standby Diesel-Generator Sets (78-DGP-6) (A) **Ja 88**

Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project (78-DGP-29) (A) **Ja 88**

Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Ja 88**

#### Diesel-Generator Sets

The Special Requirements for Nuclear Application Standby Diesel-Generator Sets (78-DGP-6) (A) **Ja 88**

#### Diesel Locomotives

Progress in Railways Mechanical Engineering—1977-1978 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**

#### Diesel Truck Engines

An Accelerated Durability Test Program for Diesel Truck Engines (78-DGP-23) (A) **Ja 88**

#### Differential-Difference Equation

Graphical Solutions for the Characteristic Roots of the First Order Linear Differential—Difference Equation (78-WA/DSC-31) (A) **Ap 96**

#### Differential Equations

Compressor Response to Spatially Repetitive and Non-Repetitive Transients (79-GT/Isr-14) (A) **D 83**

A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 96**

#### Diffuser Wall

An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Jl 91**

#### Diaphragm Design

On the Design of Ductile Elastic Annular Diaphragms (79-DET-109) (A) **D 106**

#### Diaphragm Study

Behaviour of Metallic Safety Rupture Diaphragms Containing Imperfections (79-DET-107) (A) **D 106**

Dibelius, N. R. The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Jl 91**

Dickson, W. H. Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ag 100**

Dickson, W. H. Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) (A) **Ap 89**



## Die Casting

Move Toward Closed-Loop Control in Die Casting (BTR) **F 58**

## Die Profiles

Optimization of Die Profiles for Deep Drawing (79-DET-1) (A) **N 100**

## Die Temperatures

Die Temperatures During Production Drop Forging (78-WA/Prod-28) (A) **My 100**

## Die Wear Characteristics

Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**

Diebold, J. P. Noncatalytic Conversion of Biomass to Gasoline (79-Sol-29) (A) **Ag 96**

Diedrich, J. H. An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Ji 91**

## Dielectric Constant

Dielectric Constant of Water and Steam **S 44**

## Dielectric Transitions

Some Observations on the Relationship Between Lubricant Mechanical and Dielectric Transitions Under Pressure (79-Lub-16) (A) **D 103**

## Diesel Engine

Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives (78-DGP-15) (A) **Ja 87**

Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine (78-DGP-10) (A) **Ja 87**

Compact Diesel Engines in Traction Applications (78-DGP-8) (A) **Ja 87**

Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 86**

Diesel Engine Emissions (ES) **Ag 19**

Diesel Engine Progress (IF) **F 84**

An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Ja 86**

Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**

Heavy-Duty LPG Engine (IF) **Ap 80**

The Influence of Cylinder Cutoff on Fuel Consumption and Emissions of Diesel Engines (78-DGP-13) (A) **Ja 87**

Mitsubishi-Man Diesel Engine (IF) **O 53**

Piston Ring Scuffing-A Multi-Parameter Investigation (78-DGP-14) (A) **Ja 87**

Simulation of a Turbocharged Diesel Engine to Predict the Transient Response (78-DGP-11) (A) **Ja 87**

Some Considerations on the Application of Chain Drives to Diesel Engines (78-DGP-4) (A) **Ja 86**

## Diesel Engine Air System

Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System (78-DGP-5) (A) **Ja 86**

## Diesel Exhausts

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**

## Diffusers

Distinctions Between Two Types of Self Excited Gas Oscillations in Vaned Radial Diffusers (79-GT-58) (A) **Ji 92**

The Flow Control Properties of a Specially Designed Tee-Joint (78-WA/DSC-5) (A) **Ap 94**

Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) (A) **O 84**

Matching of Turbocomponents Described by the Example of Impeller and Diffuser in a Centrifugal Compressor (79-GT-52) (A) **O 82**

Performance Correlations for Flat and Conical Diffusers (79-GT-52) (A) **Ji 91**

## Diffusion-Flame Combustor

Operation of GT-225 Diffusion-Flame Combustor on Alternative Fuels Performance, Durability and Emissions (79-GT-138) (A) **Ji 92**

## Diffusion Flames

Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**

## Diffusion Limit Reactions

The Analysis of Catalytic Heat Exchangers for Diffusion Limited Reactions (79-HT-53) (A) **N 103**

## Digital Control Systems

Fuel Optimization (ES) **F 25**

## Digital Controls

The Future of Numerical Controls **S 27**

## Digital Hearing Aid

Implantable Digital Hearing Aid (BTR) **Ap 48**

## Digital Logic Elements

Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers with

Position Feedback (78-WA/DSC-3) (A) **Ap 93**

## Digital Simulation

Simulation of a Turbocharged Diesel Engine to Predict the Transient Response (78-DGP-11) (A) **Ja 87**

## Digital Techniques

Time Domain Analysis of Machinery Vibration Signals Using Digital Techniques (79-DET-13) (A) **N 110**

## Digital Test System

Model Analysis of Gas Turbine Buckets Using a Digital Test System (79-GT-124) (A) **Ag 100**

Dillard, D. A. A Quadratic Finite Element for the Three-Dimensional Convective-Transport Equation (79-HT-50) (A) **N 103**

## Diluent Gases

The Experimental Behavior of Premixed Flames in Tubes-The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**

DiLuna, L. J. An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**

Dimarogonas, A. D. Identification of Cracks in Circular Plates Welded at the Contour (79-DET-106) (A) **D 106**

## Dimensional Integrity

Dimensional Integrity (C) **Ji 39**

Dimmer, J. E. Field Studies of Slagging in Tangentially Fired Boiler Furnaces-Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**

## Diode Panels

Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**

## Diode Solar Panel

A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**

DiPrima, R. C. Elections to Fellow Grade **Je 85**

Dirac, P. The Beauty of Einstein's Thought (BTR) **Je 46**

## Directional Drilling

Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**

## Direct-Cycle Gas Turbine

Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ji 97**

## Direct-Drive Clutch

Marine Reversing Gear Incorporating Single Reversing Hydraulic Coupling and Direct-Drive Clutch for Each Turbine (79-GT-61) (A) **Ag 98**

## Direct Heat Removal

Testing of the CRP Direct Heat Removal Service in a 1/21 Scale Model (79-HT-5) (A) **O 91**

## Direct-Search Method

The Direct-Search Method in CNC Interpolators (78-WA/Prod-40) (A) **My 102**

## Directional Characteristics

Study of a Vibratory Feeder with Repulsive Surface Having Directional Characteristic (79-DET-27) (A) **N 111**

## Disabled Physicians

Doctors Who Need Dotoring (BTR) **Ap 52**

## Disc Vibration

Disc Vibration-Rotating Blade and Stationary Vane Interaction (79-DET-83) (A) **N 117**

## Discharge Coefficients

Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) (A) **Mr 92**

## Discrete Time Optimal Control

A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**

## Discretization

Vibration Analysis of Turbomachinery Blades Using Dedicated Discretization and Twisted Beam Theory (79-DET-85) (A) **N 117**

## Disk Flexibility

Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) (A) **Mr 84**

## Disk Skew

Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Ji 99**

## Disks

Coupled Vibrations of Blades in Bending-Bending-Torsion and Disks and Out-of-Plane and In-Plane Motion (79-DET-90) (A) **D 104**

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**

The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Je 100**

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Ji 96**

Generalized Laminar Heat Transfer From the Surface of a Rotating Disk (78-WA/HT-29) (A) **Mr 95**

Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 88**

Mass Transfer at the Edge of a Rotating Disk (79-HT-34) (A) **O 95**

## Dispersion Modeling

The Effect of the Hi-Vol Methodology on Air Quality Modeling (78-WA/APC-11) (A) **Ap 96**

## Dispersion Parameters

Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**

## Displacement Continuity

Analysis of Anisotropic Sandwich Plates Assuring the Continuity of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**

## Displacement Response

Toward the Rational Selection of Base Isolation Systems (79-PVP-53) (A) **S 97**

## Disposal Option

Nuclear Power and Radioactive Waste: Sub-Seabed Disposal Option? (CB) **Ap 104**

## Disposal Project

Disposing of Nuclear Wastes (ES) **Ap 26**

## Distillate Fuels

The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**

Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **Ji 102**

## Distorted Flow

A General Solution for Distorted Flow in Cascades of Aerofoils (79-GT-65) (A) **Ji 93**

## Distortion Development

The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ji 103**

## Distributed Heat Pump Systems

Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems (78-WA/HT-63) (A) **Ap 93**

## Distributed Optimum Control Law

A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**

## Distributed Parameter Systems

A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 98**

## Distribution System

TankTrain-A High Volume Bulk Liquid Transportation System (78-WA/RT-9) (A) **My 93**

## Distributor Injection Pump

Distributor Injection Pump, Type VE, Design and Examples for Application (78-DGP-7) (A) **Ja 87**

## Diverting Agent

A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**

Djordjevic, W. Multi-Degree-of-Freedom Analysis of Power-Actuated Valves (79-PVP-106) (A) **S 102**

## Doctorates

Ph. Details (C) **O 40**

Dodard, M. Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 99**

Dodd, A. B. Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 86**

Doeh, G. "Right On" and Resonant (C) **F 55**

Doering, H. von E. Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**

Doering, R. D. The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) (A) **My 95**

Doherty, M. C. Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 99**

Dohner, A. R. Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Drivability Constraint (78-WA/DSC-25) (A) **Ap 95**

Dokumaci, E. Dynamic Stability of Pre-Twisted Blades under Lateral Parametric Excitation (79-DET-91) (A) **D 104**

Dolbec, A. C. Assessment of Hot Gas Cleanup Systems

and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Jl 104**

**Dollat, J.** Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Ja 98**

**Dome Bearing Design**  
Astronomical Observatory Dome Bearing Design (78-WA/DE-19) (A) **Mr 88**

**Dome Salt Mine**  
National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 128**

**Dome Structure**  
The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**

**Domestic Crude Oil**  
An Oil Bonanza (ES) **N 33**

**Donaher, W. A.** (author) Products Liability and the Reasonably Safe Product: A Guide for Management, Design, and Marketing (CB) **F 134**

**Donovan, T. E.** Numerical Investigation of Electric Field Effects on Unsteady Buoyant Molten Glass Flows (79-HT-98) (A) **N 187**

**Donnelly, W. J.** Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**

**Dooley, L. M.** High Adhesion Truck for Electric Locomotives (79-RT-7) (A) **Ag 97**

**Door Mechanism**  
Combined Hinge and Latch (BTR) **S 53**

**Dore, R.** Modeling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**

**Doriot, J. M.** Functional Characterization of Canine Anterior Cruciate Ligaments (79-Bio-1) (A) **S 108**

**Dorman, F.** Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**

**Dornfeld, D.** A New Heuristic for Improving the Efficiency of Numerically Controlled Punch Presses (78-DET-86) (A) **Ja 90**

**Dost, S.** Application of Hamilton's Principle to Large Deformation and Flow Problems (79-APM-18) (A) **S 187**

**Double-Layer Panels**  
The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) (A) **Mr 90**

**Double-Phase Change**  
Theoretical Investigation of the Dynamic Characteristics of Heat Exchangers with Double Phase Change (79-HT-81) (A) **N 105**

**Doughty, J. R.** Questioning Cosmological Models (C) **N 58**

**Dowell, E. H.** On Some General Properties of Combined Dynamical Systems (78-WA/PM-26) (A) **Je 93**

**Downs, B.** Accurate Reduction of Stiffness and Mass Matrices for Vibration Analysis and a Rationale for Selecting Master Degrees of Freedom (79-DET-18) (A) **N 110**; Vibration Analysis of Continuous Systems by Dynamic Discretization (79-DET-12) (A) **N 110**; Vibration Analysis of Turbomachinery Blades Using Dedicated Discretization and Twisted Beam Theory (79-DET-85) (A) **N 117**

**Dowson, D.** Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus II—Starved Conjunction (78-Lub-1) (A) **Ja 93**

**Doyle, P. A.** Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Je 92**

**Draft Structural Design Criteria**  
Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct (79-PVP-27) (A) **Ag 105**

**Drafting**  
CAD Applied to Materials Handling Engineering **N 46**  
Computer Aided Drafting and Applications to Materials Handling Engineering (78-WA/MH-5) (A) **My 98**

**Drag Force**  
Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Je 89**  
Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 89**

**Drake, K. R.** Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Jl 97**

**Drapp, D. J.** Multimode Leak Detection System

(78-Pet-53) (A) **F 125**

**Draw Force**  
Stress in Glass Fibers Induced by the Draw Force (78-WA/PM-21) (A) **My 104**

**Dreyer, H. S.** Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**

**Drill Grinders**  
A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**

**Drill Holes**  
Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**

**Drill Point Design**  
A Mathematical Model for Drill Point Design and Grinding (78-WA/Prod-35) (A) **My 101**

**Drill String**  
Development of Deviation Control Tool (78-Pet-58) (A) **F 126**

**Drills**  
Deep-Hole Worm-Pattern Drills (IF) **My 58**

**Drillhole Stimulation**  
Drillhole Stimulation Iceland (78-Pet-24) (A) **Ja 98**

**Drilling**  
Can Nozzle Design be Effectively Improved for Drilling Purposes (A) **F 125**  
Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**  
Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**

**Drilling Depths**  
A Study to Determine Roller Cone Cutter Offset Effects at Various Drilling Depths (78-Pet-23) (A) **Ja 98**

**Drilling Materials**  
Operating Experience with Marine Riser Buoyancy (78-Pet-56) (A) **F 126**

**Drilling Platform**  
Mobile Drilling Platform (IF) **Ap 61**

**Drilling Workshops**  
Petroleum Division Plans Drilling and Management Workshops **Ag 82**

**Dring, R. P.** An Experimental Investigation of Film Cooling on a Turbine Rotor Blade (79-GT-32) (A) **Ag 97**

**Drive System Window**  
The Characterization of Cam Drive System Window (79-DET-24) (A) **N 111**

**Driveability Constraint**  
Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Driveability Constraint (78-WA/DSC-25) (A) **Ap 95**

**Drivebelts**  
Durable, Nonslip, Stainless-Steel Drivebelts (BTR) **Jl 48**

**Drop Forging**  
Die Temperature During Production Drop Forging (78-WA/Prod-28) (A) **My 100**

**Drop Tests**  
Scale Model Impact Tests of Hazardous Material Container Designed to Section VIII, Division 1, of the ASME Code (79-PVP-42) (A) **Ag 106**

**Dropek, R. K.** A Study to Determine Roller Cone Cutter Offset Effects at Various Drilling Depths (78-Pet-23) (A) **Ja 98**

**Dropletwise Condensation**  
Dropwise Condensation on Rough Aluminum Surfaces (78-WA/HT-42) (A) **Mr 96**

**Drouin, G.** Functional Characterization of Canine Anterior Cruciate Ligaments (79-Bio-1) (A) **S 108**; Modeling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**

**Dry Bearing Tests**  
Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**

**Dry Contact**  
Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**

**Dry Containment**  
Subsea Chamber Design for the Dry Containment of Wellhead Equipment (78-Pet-43) (A) **F 125**

**Dry Cooling**  
Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Je 92**

**Dry Cooling Techniques**  
Dry Cooling of Power Plants (ES) **D 20**

**Dry Cooling Towers**  
Aerodynamics of the Heat Exchangers and Their

Arrangement in Large Dry Cooling Towers (78-WA/HT-19) (A) **Ap 91**

Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers (78-WA/HT-18) (A) **Ap 90**

**Dry Rock**  
The Federal Hot Dry Rock Geothermal Energy Development Program: An Overview (79-PVP-36) (A) **Ag 105**  
The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**  
Hydraulically Actuated Treating Packers for Dry Rock Geothermal Applications (79-PVP-23) (A) **Ag 105**

**Dry, Subsea Well Completion**  
Characteristics of a Dry, Subsea Well Completion (78-Pet-41) (A) **F 124**

**Drying Processes**  
Contact Drying of a Sheet of Moist Fibrous Material (79-Tex-2) (A) **D 99**  
A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) **Ja 92**

**D'Souza, A. F.** Analysis of Nonlinear Hunting Vibrations of Rail Vehicle Trucks (79-DET-25) (A) **N 111**

**Dual-Beam Microwave Applicator**  
Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) (A) **Mr 91**

**Dual System**  
U.S. Metric Board Chief Calls Dual System "Intolerable" (NR) **Jl 63**

**Duck, G. E.** Development of Piston Rings for High Speed Engines in Europe (78-DGP-18) (A) **Ja 88**

**Ductile Fracture Behavior**  
Comparisons Between Plastic R-Curve Toughness Measurement, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

**Ductile Fractures**  
Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**

**Ductile Iron Fatigue**  
Generating Ductile Iron Fatigue Data with a Calibrated Tuning Fork System (79-DE-11) (A) **Ag 102**

**Ducts**  
An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**  
Laminar Heat Transfer in Porous Ducts with Variable Suction (78-WA/HT-41) (A) **Mr 96**  
Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Jl 90**; (A) **Ag 98**  
Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region (78-WA/HT-37) (A) **Mr 96**

**Wind-Wheel Electric-Power Generator (BTR) **Ja 48****

**Due-Date Constraints**  
Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**

**Duffey, T. A.** Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**

**Dukalov, S. G.** Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**

**Dukkipati, R. V.** A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**

**Dullaghan, M. E.** Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Tex-5) (A) **Ja 92**

**Dumbaugh, G. D.** Coal or Lignite Handling Functions by Least Input Power (79-IPC/Fu-2) (A) **D 101**

**Dumiso, C.** Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**

**Dunbar, J. B.** Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**

**Duncan, L. S.** The Impact of Manufacturing Technology on the Engineering Manager (79-DE-4) (A) **Ag 101**

**Duncan, R. L.** Parameter Monitoring for Corrosion Control in Gas Turbines (79-JPGC-GT-1) (A) **D 98**

**Dundurs, J.** A Closed Crack Tip Terminating at an Interface (78-WA/PM-28) (A) **Je 93**

**Dunn, J. R.** A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**

**Dunn, P. F.** A Model of MHD Natural-Convection Heat Transfer from a Finite Cylinder (78-WA/HT-24) (A) **Mr 95**

**Dunn, W. J.** Realistic Prediction and Control of Vehicle

- Noise Resulting from Road Inputs (79-DET-75) (A) **N 116**
- Dunsing, R. J.** (editor) You and I Have Simply Got to Stop Meeting This Way (CB) **Ag 108**
- Dummoody, B.** A Pseudo-Random Noise Generator for Dynamic Response Testing of Offshore Structures (79-DET-42) (A) **N 112**
- Du Parquet, J.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**
- du Plessis, M. P.** Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**
- Dupont, H. M.** Environmental Control System Design for the Tomahawk Cruise Missile (79-ENAS-7) (A) **O 96**
- Durability Evaluation**  
Operation of GT-225 Diffusion-Flame Combustor on Alternative Fuels: Performance, Durability and Emissions (79-GT-138) (A) **Jl 92**
- Durao, F. G.** Measured Velocity Characteristics of the Flow in the Impeller of a Centrifugal Compressor (79-HT-32) (A) **O 94**
- Durban, D.** Axially Symmetric Radial Flow of Rigid/Liner-Hardening Materials (79-APM-20) (A) **S 107**
- Durbetaki, P.** Ignition of Pyrolyzing Media under Convective Heating (79-HT-27) (A) **O 94**
- Durocher, L. L.** Design Considerations in the Coupling of Shaft-Disk Systems by Interference Fits (79-DE-8) (A) **Ag 101**
- Dussinger, W. A.** Power Plant Performance Model (79-JPGC-Pwr-1) (A) **D 97**
- Dust Collecting Plates**  
On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) (A) **Ja 96**
- Dust-Trash Removal**  
Dust-Trash Removal by the SRCC Tuft-To-Yarn Processing System (78-Tex-2) (A) **Ja 92**
- Dusty Buoyant Thermal**  
Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**
- Dutcher, R. E.** Sensitization Kinetics in Type 304 Stainless Steel (79-PVP-85) (A) **S 99**
- Dutt, G. S.** Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**
- Duvall, G. D.** Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Jl 100**
- Dykema, O. W.** Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers (78-WA/APC-1) (A) **Ap 102**
- Dym, C. L.** Elections to Fellow Grade **My 99**
- Dynamic Analysis**  
Analysis of Massless Elastic Chains with Servo Controlled Joints (78-WA/DSC-34) (A) **Ap 99**  
Dynamic Analysis of a Prototype Wheel Balancer (79-DET-72) (A) **N 116**  
Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**  
Dynamic Analysis of Rotating Asymmetric Cross-Section Blade Packet (79-DET-93) (A) **D 105**  
Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**  
Multiport Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) (A) **Ja 90**  
Spherical Bearings: Static and Dynamic Analysis Via the Finite Element Method (79-Lub-1) (A) **D 102**  
Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **Mr 99**
- Dynamic Behavior**  
A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**  
Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**  
Simulation of the Influence of Bonding Materials on the Dynamic Behavior of Laminated Composites (78-WA/APM-15) (A) **My 104**  
Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**
- Dynamic Characteristics**  
Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**  
Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) **Ja 93**
- Dynamic Control**  
Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 96**
- Dynamic Data System**  
Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**  
Signature Analysis for Mechanical Systems via Dynamic Data System (DDS) Monitoring Technique (79-DET-10) (A) **N 110**
- Dynamic Discretization**  
Vibration Analysis of Continuous Systems by Dynamic Discretization (79-DET-12) (A) **N 110**
- Dynamic Effects**  
Evaluation of Internal Combustion Engine Valve Trains by an Empirically Tuned Simulation Model (78-DGP-9) (A) **Ja 87**
- Dynamic Energy Analysis**  
A Comprehensive Energy Analysis Applied to and Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 125**
- Dynamic Loading**  
Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) (A) **Mr 86**
- Dynamic Loading Conditions**  
Behavior of Finite Journal Bearings Under Dynamic Loading Conditions (79-Lub-22) (A) **D 104**
- Dynamic Model**  
Multiport Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) (A) **Ja 90**  
Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**
- Dynamic Peak Responses**  
Evaluation of the SRSS Combination of Primary Plus Secondary Dynamic Peak Responses (79-PVP-40) (A) **Ag 107**
- Dynamic Process**  
Analysis of Operating Rules in a Computerized Manufacturing System (78-WA/Prod-38) (A) **My 102**
- Dynamic Programming**  
Application of Dynamic Programming to Optimize Tool Replacement Schedules for Multi-Tool Operations Involving Distributed Tool Lives (79-DET-4) (A) **N 109**  
A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**
- Dynamic Propagation**  
Dynamic Propagation of Circumferential Cracks in Two Pipes with Large-Scale Yielding (79-PVP-81) (A) **S 99**
- Dynamic Properties**  
The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 96**  
Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**
- Dynamic Response**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**  
The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**  
Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Jl 100**  
A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**  
Some Considerations on the Application of Chain Drives to Diesel Engines (78-DGP-4) (A) **Ja 86**  
Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**
- Dynamic Response Calculations**  
Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 95**
- Dynamic Seismic Analysis**  
Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) (A) **My 96**
- Dynamic Simulation**  
Dynamic Simulation of LMFBP Plant Under Natural Circulation (79-HT-6) (A) **O 91**
- Dynamic Stability**  
Dynamic Stability of Pre-Twisted Blades under Lateral Parametric Excitation (79-DET-91) (A) **D 104**
- Dynamic Stress Analysis**  
Dynamics Stress Analysis of a Spur Gear Tooth (79-DET-38) (A) **N 112**
- Dynamic Systems**  
Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) (A) **Ap 99**  
Establishment of Dispensing Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**
- Estimation Theory and its Role in Optimal Control (78-WA/DSC-2) (A) **Ap 93**  
Harmonic Analysis of Dynamic Systems with Non-Symmetric Nonlinearities (78-WA/DSC-10) (A) **Ap 94**  
Thermionic Power Converters Mechanical Systems (78-DET-74) (A) **Ja 89**
- Dynamic Systems and Controls**  
An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) (A) **Ap 95**  
Analysis of Massless Elastic Chains with Servo Controlled Joint (78-WA/DSC-34) (A) **Ap 99**  
Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 96**  
Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers with Position Feedback (78-WA/DSC-3) (A) **Ap 93**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**  
Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) (A) **Ap 99**  
Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**  
Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**  
Discrete Parts Assembly Automation—An Overview (78-WA/DSC-11) (A) **Ap 94**  
A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**  
Efficiency and Amplification in Jet Pumps (78-WA/DSC-7) (A) **Ap 94**  
Electro-Fluid Pulse-Width Modulated Valve (78-WA/DSC-8) (A) **Ap 94**  
Electronic Hardware and its Impact on Numerical Control (78-WA/DSC-16) (A) **Ap 95**  
Estimation Theory and its Role in Optimal Control (78-WA/DSC-2) (A) **Ap 93**  
Experience with Experimental Applications of Multivariable Computer Control (78-WA/DSC-26) (A) **Ap 96**  
Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**  
A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 96**  
The Flow Control Properties of a Specially Designed Tee-Joint (78-WA/DSC-5) (A) **Ap 94**  
A Fluidic Partial Pressure Sensor (78-WA/DSC-22) (A) **Ap 95**  
Graphical Solutions for the Characteristic Roots to the First Order Linear Differential—Difference Equation (78-WA/DSC-31) (A) **Ap 96**  
Harmonic Analysis of Dynamic Systems with Non-Symmetric Nonlinearities (78-WA/DSC-10) (A) **Ap 94**  
Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) (A) **Ap 94**  
Multivariable Identification of Some Paper Plant Parameters (78-WA/DSC-4) (A) **Ap 94**  
Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**  
Optimal Control Concepts for the Characterization and Design of Highway Vehicle—Trailer Systems (78-WA/DSC-27) (A) **Ap 96**  
Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**  
Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Drivability Constraint (78-WA/DSC-25) (A) **Ap 95**  
Optimal Control of Turbine Engines (78-WA/DSC-33) (A) **Ap 99**  
An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 95**  
Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**  
The Performance of Automotive Hand Controls (78-WA/DSC-38) (A) **Ap 99**  
Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**  
Resonance Equalization in Feedback Control Systems (78-WA/DSC-24) (A) **Ap 95**  
Robot Arms for Assembly (78-WA/DSC-37) (A) **Ap 99**  
Some Connections Between Modern and Classical Control Concepts (78-WA/DSC-20) (A) **Ap 95**



Speculations on the Future of Numerical Controls (78-WA/DSC-9) (A) **Ap 94**  
 A Survey of Economic Analysis for Programmable Assembly (78-WA/DSC-17) (A) **Ap 95**  
 A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-16) (A) **Ap 95**

#### Dynamic Vibrations

Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Ja 86**

#### Dynamically Loaded Bearings

Analysis of Dynamically Loaded Floating-Ring Bearings for Automotive Applications (78-Lub-14) (A) **D 103**

#### Dynamics

Analysis of Pipe Whip (79-PVP-122) (A) **S 104**  
 Bifurcations in Dynamical Systems With Internal Resonance (78-WA/APM-12) (A) **My 104**

Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**

Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**

On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) (A) **Ja 96**

Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) (A) **My 105**

Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**

Dynamics of Rolling-Element Bearings Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) (A) **Ja 95**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) **Ja 96**; Part III: Ball Bearing Analysis (78-Lub-32) (A) **Ja 96**; Part IV: Ball Bearing Results (78-Lub-33) (A) **Ja 96**

Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) (A) **S 105**; Part 2: Experiments (79-APM-4) (A) **S 105**

The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Ja 99**

Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**

Lateral Dynamics and Stability of the Skateboard (79-APM-14) (A) **S 106**

Oil's Well That Ends Well (BTR) (A) **Ap 81**

Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**

Simulation of a Turbocharged Diesel Engine to Predict the Transient Response (78-DGP-11) (A) **Ja 87**

On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) (A) **Ja 93**

Twentieth Structural Dynamics and Materials Conference (NR) **F 69**

A Variable-Step Central Difference Method for Structural Dynamics Analysis—Part I: Theoretical Aspects (79-PVP-120) (A) **S 103**; Part II: Implementation and Performance Evaluation (79-PVP-121) (A) **S 104**

Dyson, E. High-Frequency Yarn Tension Variations in Spinning (79-Tex-6) (A) **D 100**

## E

Eadie, W. S. Design and Application of Feed-Water Pumping Operation for Improved Availability in Cyclic Operation (79-JPGC-Pwr-8) (A) **D 97**

Eagleson, K. W. Automated Biomonitoring Applications to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Biosensing for Watershed Management (79-ENAs-41) (A) **O 99**

Earle, E. (recipient) Charles T. Main Student Section Award **Ja CR-12**

#### Earth's Motion

Space Behavior as Einstein Expected (BTR) **S 58**

#### Earth-Sheltered Housing

Underground Housing (NB) **D 75**

#### Earthmoving Machines

Power Trains for Tractors **Ap 40**

Earthquake Damage Protection

Asseismic Building Isolation Systems: Better Protection Against Earthquake Damage (79-PVP-54) (A) **S 96**

#### Earthquakes

Do Dogs Hear Earthquakes? (C) **Ja 44**

'The Earth Burps Methane...' (BTR) **Jl 41**

#### Earthquake Research (EN)

Seismic-Evaluation of Piping and Supports at Diablo Canyon Site Units 1 and 2, for the Postulated Hogni Earthquake (79-PVP-100) (A) **S 100**

Easley, J. T. Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**

Eastwood, J. C. Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) (A) **Ja 88**

Ebersole, T. E. Heat Exchanger Performance in Latent Heat Thermal Energy Storage (79-HT-17) (A) **O 92**

Eckhardt, H. D. Mathematical Modelling of Textile Weave Room Sound Propagation (78-Tex-3) (A) **Ja 92**

#### Economic Advantages

Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Ja 100**

#### Economic Analysis

A Survey of Economic Analysis for Programmable Assembly (78-WA/DSC-17) (A) **Ap 95**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**

#### Economic Application

Application of Low-Btu Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**

#### Economic Constraints

Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Jl 90**

#### Economic Design Parameters

Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery (78-Pet-3) (A) **Ja 97**

#### Economic Evaluation

Conversion of Industrial Plants to use Coal as Fuel **Jl 26**

Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**

#### Economic Feasibility

Co-Generation of Steam and Electrical Energy of a Manufacturing Plant as Affected by Economy of Scale (78-IPC-Pwr-4) (A) **Ja 91**

The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) (A) **My 95**

#### Economic Forecast

Purchasing Managers Wary of Recession in 1979 (NR) **Ja 56**

#### Economic Impact

Energy-Conserving Cogeneration-Performance, Economics and Legislation (78-WA/Enr-5) (A) **Ja 92**

#### Economic Issues

Matters of Judgment (C) **Ja 44**

#### Economic Issues

Economic Issues Associated With Machinery and Its Manufacturers (79-DET-52) (A) **N 114**

Economic Sizing of Steam Piping and Insulation (78-WA/Enr-9) (A) **Ja 93**

#### Economic Sizing

Economic Sizing of Steam Piping and Insulation (78-WA/Enr-9) (A) **Ja 93**

#### Economic Variables

Economics of Wind Generated Power (78-Pet-80) (A) **F 128**

#### Economical Device

Jimmy-Proof Auto Lock (BTR) **Jl 44**

#### Economical Feeding Systems

Coal-Feeding Systems (ES) **Ap 21**

#### Economical Technique

Low-Cost Solar Cells (ES) **Jl 20**

#### Economical Thermal Engine

Diesel Engine Progress (IF) **F 84**

#### Eddy Viscosity

Eddy Viscosity Calculations of Turbulent Buoyant Plumes (79-HT-51) (A) **N 103**

Edgerton, R. H. Thermionic Power Converters for Solar Energy (78-DET-74) (A) **Ja 88**; Thermoelectric Generators for Solar Energy Conversions (79-Pet-75) (A) **F 127**

#### Editorials

As the President Has Seen It **Ja 17**

ASME in Public Affairs—Federal and State **F 23**

The Atlantic Council Meeting **N 31**

Bloody But Unblown: A Close Look at the Hydrolevel Case **Ap 17**

Corporate Support of ASME **My 19**

"A Few Good Men" **D 19**

International Affairs **Ja 17**

Let's Emphasize the Positive! **Ag 17**

Past is Prologue **O 17**

A Pitch for SWE **S 19**

What is Engineering? Who is An Engineer? **Mr 21**

A Year of Mixed Blessings **Jl 19**

#### Education Programs

Study-By-Mail (NB) **Jl 85**

#### Education/Revolution

Educating for the Future (EN) **Ag 83**

Edwards, D. K. Effect of Cell Size on Natural Convection in High L/D Tilted Rectangular Cells Heated and Cooled on Opposite Faces (78-WA/HT-5) (A) **Mr 93**

Edwards, E. F. Rail-to-Barge Transportation of Coal (78-WA/MH-6) (A) **My 98**

Edwards, P. R. The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**

Edwards, T. G. Thermal Cycle Loss Considerations for Power Plants Burning Very Low Rank Solid Fuels (79-JPGC-Pwr-4) (A) **D 97**

#### Effective Process

Cryogenics: Applications Unlimited (BTR) **Jl 50**

#### Effective Reliability Testing

Effective Reliability Testing and Growth Measurement (78-WA/Aero-21) (A) **Ap 102**

#### Efficiency Degradation

Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Ja 94**

#### Efficient Engineering Management

Improving Productivity Through Efficient Engineering Management **Ja 27**

#### Efficient Time-Domain Analysis

Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**

Ehr, E. A. Women: A Growing Force in Engineering (C) **D 52**

Ehrlich, S. Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Jl 104**

Elber, R. J. Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**; A Comparison of Fatigue Test Data on Piping with the ASME Code Fatigue Evaluation Procedure (79-PVP-92) (A) **S 100**

Eichhorn, R. Natural Convection from Vertical Plates with Semicircular Leading Edges (79-HT-104) (A) **N 108**

Eidemiller, R. I. A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**

#### Eigenfunctions

Identification of Eigenfunctions by Galerkin Technique (79-DET-35) (A) **N 112**

#### Eigenstrains

The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) (A) **S 107**

Elmermacher, J. P. Head Strength Evaluation of Recessed Threaded Fasteners (79-DET-117) (A) **D 107**

Elmashar, A. M. Contact Drying of a Sheet of Moist Fibrous Material (79-Tex-2) (A) **D 99**

#### Einstein's Theory

The Beauty of Einstein's Thought (BTR) **Ja 46**

Eisenstadt, R. Elections to Fellow Grade **Jl 88**

Eisinger, K. Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) (A) **S 106**; Clamped Beam Parametric Amplifier (79-APM-9) (A) **S 106**

Eisa, N. S. Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Ja 96**

El Altar, M. A. A General Solution for Distorted Flow in Cascades of Aerofoils (79-GT-65) (A) **Jl 93**

El-Masri, M. A. Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Jl 93**

#### Elastic Annular Diaphragms

On the Design of Ductile Elastic Annular Diaphragms (79-DET-109) (A) **D 106**

#### Elastic Chains

Analysis of Massless Elastic Chains with Servo Controlled Joints (78-WA/DSC-34) (A) **Ap 99**

#### Elastic Composites

Harmonic Waves in Layered Composites: New Bounds on Eigenfrequencies (78-WA/APM-23) (A) **My 105**

#### Elastic Connecting-Rod Bearing

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics



- (78-Lub-6) (A) **Ja 94**
- Elastic Deformation**  
Elastic Deformation of Ball Bearings, Gears, and Cams (BTR) **Ji 42**
- Elastic Fields**  
The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) (A) **S 107**
- Elastic Finite Element Analysis**  
Local Flexibility Coefficients for the Built-In Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**
- Elastic Foundations**  
Loads Moving on Beams Supported by Layered Elastic Foundation (79-DET-15) (A) **N 110**
- Elastic Half-Space**  
Unbalanced Response of a Large Rotor-Pedestal-Foundation System Using an Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**
- Elastic Linkages**  
The Analysis of an Elastic Four-Bar Linkage on a Vibrating Foundation Using a Variational Method (79-DET-64) (A) **N 114**
- Elastic/Plastic Analysis**  
Criteria and Associated Dynamic Elastic/Plastic Analysis of Auxiliary Branch Piping for a Large LOCA (79-PVP-26) (A) **Ag 106**
- Elastic-Plastic Bending**  
Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**
- Elastic-Plastic Boundary**  
Measurement of the Elastic-Plastic Boundary Around Cold-worked Fastener Holes (78-WA/APM-2) (A) **My 103**
- Elastic-Plastic Buckling**  
Elastic-Plastic Buckling of Internally Pressurized Thin Torspherical Shells (79-PVP-52) (A) **S 97**
- Elastic-Plastic Creep**  
An incremental Form of the Single-Integral Nonlinear Viscoelastic Theory for Elastic-Plastic-Creep Finite Element Analysis (79-PVP-114) (A) **S 103**
- Elastic-Plastic Materials**  
On the Hardening Response in Small Deformation of Metals (78-WA/APM-17) (A) **My 104**
- Elastic-Plastic Models**  
Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) (A) **S 102**
- Elastic-Plastic Stress Analysis**  
Elastic-Plastic Stress Analysis and ASME Code Evaluation of a Bottomhead Penetration in a Reactor Pressure Vessel (79-PVP-17) (A) **Ag 104**
- Elastic-Plastic Tension-Torsion**  
Elastic-Plastic Tension-Torsion in a Circular Bar of Rate-Sensitive Material (79-APM-22) (A) **S 107**
- Elastic Strand**  
Finite Extension of an Elastic Strand With a Central Core (78-WA/APM-7) (A) **My 103**
- Elastic Strips**  
The Stability of a Moving Elastic Strip Subjected to Random Parametric Excitation (79-APM-10) (A) **S 106**
- Elastic Structures**  
Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**
- Elastic Tubes**  
Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**
- Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**
- Elasticity**  
Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**
- Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) (A) **S 106**
- The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) (A) **S 106**
- Postbuckling Analysis of Continuous, Elastic Systems Under Multiple Loads—Part 1: Theory (79-APM-16) (A) **S 107**; Part 2: Applications (79-APM-17) (A) **S 107**
- Elastics**  
Elastic and Viscoplastic Impact Bending Response Analysis of Nuclear Shipping Cask Structures (79-PVP-43) (A) **Ag 107**
- Elasto-Plastic Analysis**  
Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) (A) **Ag 106**
- Elastohydrodynamic Contacts**  
A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory (78-Lub-9) (A) **Ja 94**
- Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**
- Elastohydrodynamic Lubrication**  
Effects of Asperities in Elastohydrodynamic Lubrication (79-Lub-6) (A) **D 102**
- Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus II—Starved Conjunction (78-Lub-1) (A) **Ja 93**
- Elastohydrodynamic Point Conjunctions**  
Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**
- Elastohydrodynamic Squeeze Films**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**
- Elastomer Dampers**  
Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-86) (A) **N 117**
- Elastomer Mounted Rotors**  
Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Ji 100**
- Elastomers**  
The Effects of Strain and Temperature on the Dynamic Properties of Elastomers (79-DET-57) (A) **N 115**
- Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**
- Elbaz, J.** A New Computer Code for the Estimation of the Probability of Failure of PWR Pressure Vessels (79-PVP-118) (A) **S 103**
- Elder, J. A.** Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**
- Eldighidy, S. M.** Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) (A) **O 84**
- Electric Cars**  
Advanced Electric Car (BTR) **O 44**
- Electric Charge**  
Electrified Bees (BTR) **S 54**
- Electric Discharge**  
A Study of the Reduction of Carbon Dioxide in a Silent Electric Discharge (79-ENAS-13) (A) **O 87**
- Electric Field**  
Numerical Investigation of Electric Field Effects on Unsteady Buoyant Molten Glass Flows (79-HT-98) (A) **N 107**
- Electric Generating Stations**  
100-MW Solar-Powered Station (BTR) **Mr 50**
- Electric Generating System**  
MHD Subsystem (ES) **O 19**
- Electric Generation**  
Utilities Eye Wind-Powered Machine (BTR) **Ja 46**
- Electric Generator**  
Solar Electric Generator (IF) **Je 58**
- Electric Glass Melting Furnaces**  
Physical Modeling of Electric Glass Melting Furnaces for High Level Waste Immobilization (79-HT-97) (A) **N 106**
- Electric Locomotives**  
High Adhesion Truck for Electric Locomotives (79-RT-7) (A) **Ag 97**
- Electric Load Management**  
Electric Load Management (ES) **O 18**
- Electric Locomotives**  
Progress in Railway Mechanical Engineering—1977-1978 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**
- Electric Motor**  
The Hybrid Car (ES) **Ji 20**
- Electric Plant**  
Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**
- Electric Power**  
Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Ji 91**
- Commercial Superconducting Generator (BTR) **Je 50**
- Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**
- Evaluating Gasified Coal (ES) **O 18**
- A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Ji 102**
- Improved Transformer Efficiency (ES)** **O 19**
- Modeling and Experimental Analysis of a Fluidic Generator** (79-DET-9) (A) **N 109**
- A National Park Story (ES) **Ji 21**
- Refuse-Incinerating Power Station (IF) **Ap 81**
- Small, Long-Lived Thermal Battery (BTR) **O 44**
- Electric Power Generation**  
Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**
- Photovoltaic Electric Power Generation from a Utility Perspective (79-Sol-18) (A) **Ag 94**
- Wind-Wheel Electric-Power Generator (BTR) **Ja 46**
- Electric Power Industry**  
Measurement of Performance in an Engineering Environment (78-WA/Mgt-8) (A) **Je 91**
- Electric Power Research Institute (EPRI)**  
Controlling Emissions (ES) **Mr 23**
- The Solar-Electric Heating and Cooling Experiment **Ja 25**
- Electric Power Systems**  
Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**
- A Growing Market (ES) **Ag 19**
- World's Largest Solar Electric Power Station (BTR) **D 61**
- Electric Utilities**  
Big Question for Solar Power (ES) **Ja 19**
- The Difficulties in Phasing Out Oil (ES) **F 24**
- Texans Pack Fusion (ES) **O 19**
- Electric Vehicles**  
Electric Vehicle Demonstration (ES) **Ji 26**
- Electric Vehicle Demonstration Project (BTR) **N 82**
- Expanding Horizons **S 28**
- LILCO Pushes Electric Vehicles (NR) **F 67**
- Electrical Components**  
Design for Remote Work in the Deep Ocean (78-WA/OCE-4) (A) **F 130**
- Electrical Energy**  
Co-Generation of Steam and Electrical Energy for a Manufacturing Plant as Affected by Economy of Scale (78-IPC-Pwr-4) (A) **Ja 91**
- System May Speed Growth of Solar Energy Storage (BTR) **Je 55**
- Electrical Fields**  
Laminar Film Condensation Over a Vertical Circular Cylinder with Effect of Electrical Field (78-WA/HT-49) (A) **Mr 96**
- Electrical Generating Stations**  
Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**
- Electrical Generating System**  
Home Electrical Generating System (EN) **My 67**
- Electrical Power**  
Expand Sun-Powered Irrigation (BTR) **Ji 45**
- A Milestone Solar Village (ES) **F 25**
- The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Ener-4) (A) **Je 92**
- Electrical Stimulation of Fabric Filtration (ESFF)**  
Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**
- Electrical Systems**  
The Impact of Solar Power (ES) **My 21**
- Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**
- Electrically Heated Mock-up**  
Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**
- Electricity**  
America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 84**
- Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**
- A Comprehensive Energy Analysis Applied to and Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**
- Design of a 150-kW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Je 95**
- Geothermal Energy (EN) **Ji 88**
- MHD Generator Runs 500 Hours (NB) **Ji 65**
- Ocean Thermal Energy Conversion (EN) **O 64**
- Solid Backing for Gasification (ES) **Ja 19**
- A Vote of Confidence (ES) **Ap 20**

#### Electricity Generating Plant

Air-Storage Gas-Turbine Plant (IF) **S 64**

#### Electrified Power

Coal-Fired Gas Turbine (ES) **Mr 22**

#### Electro-Chemical Cells

Applications of the Electro-Chemical Combustion Oxygen

Analyzer (78-IPC-Pwr-3) (A) **Ja 91**

#### Electro-Discharged Machined Joints

The Control of Structural Vibration by Frictional Damping in

Electro Discharge Machined Joints (79-DET-79)

(A) **N 118**

#### Electro-Fluid Pulse-Width Valve

Electro-Fluid Pulse-Width Modulated Valve (78-WA/

DSC-8) (A) **Ap 94**

#### Electro-Optical Techniques

Automatic Laser Inspection Machine (BTR) **My 50**

Control/Gyroscopic Flow Meter **Mr 36**

#### Electro-Optical Packages

A Distributed Optimum Control Law for Airborne Electro-

Optical Packages (78-WA/DSC-39) (A) **Ap 99**

#### Electrochemical Depolarized Concentrator

EDC-A Regenerable CO<sub>2</sub> Removal Subsystem for an En-

hanced Capability Orbiter (79-ENAS-34) (A) **O 89**

#### Electrochemical Grinding

Electrochemical Grinding of WC-Co Cemented Carbides

(78-WA/Prod-26) (A) **My 100**

#### Electrocoalescer Comparison Tests

Electrocoalescer Comparison Performance Tests

(79-GT-174) (A) **Ji 102**

#### Electrodeposition Process

Electrodeposition Process Makes Ultrathin Iron Foil

(BTR) **N 70**

#### Electromagnets

Another Step Toward Fusion (ES) **Ja 18**

#### Electronic Analyzer

Reciprocating Engine/Compressor Maintenance and Per-

formance Analysis Using an Electronic Analyzer

(78-WA/PEM-5) (A) **My 95**

#### Electronic Circuits

Eye-Controlled Switch (C) **N 60**

Miniature Velocimeter (BTR) **Ji 50**

#### Electronic Controls

Active Magnetic Bearings (BTR) **F 58**

Distributor Injection Pump, Type VE, Design and Examples

for Application (78-DGP-7) (A) **Ja 87**

#### Electronic Governor

A Discussion of the TRI-SEN M-300 Electronic Governor

and its Possible Impact on Energy (78-DGP-22)

(A) **Ja 88**

#### Electronic Hardware

Electronic Hardware and its Impact on Numerical Control

(78-WA/DSC-16) (A) **Ap 95**

#### Electronic Line Break Controls

Electronic Line Break Controls for Gas Pipelines (78-Pet-52)

(A) **F 128**

#### Electronic Mail

Teleconferences, Electronic Mail in Future for Business

(BTR) **Ap 50**

#### Electronic Press Control

Electronic Press Control (IF) **Ja 55**

#### Electronically Controlled Turbine

An Electronically Controlled Automotive Gas Turbine

(79-GT-74) (A) **Ji 94**

#### Electronics

Electronic Pen Pals (NB) **Ji 64**

#### Electrostatic Filtration

Electrostatic Filtration (C) **Ja 48**

#### Electrostatic Precipitator Performance

Micromouse: A Robot with Unlimited Future (BTR) **S 51**

Modification of Electrostatic Precipitator Performance by

Use of Fly-Ash Conditioning Agents (78-WA/

APC-3) (A) **My 97**

#### Electrostatic Precipitators

Electrostatic Precipitator's Performance in Cycling Duty

(79-JPGC-Pwr-6) (A) **D 98**

#### Electrostatically Precipitated Fly Ash

On the Dynamics of Electrostatically Precipitated Fly Ash

(78-WA/Fu-3) (A) **Ja 96**

Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji**

**93**

#### Element Development

First Experimental Results on a Silicon-Nitride Recuperator

with Six Heat Exchanger Elements (79-GT-70) (A) **Ji**

**94**

#### Element Tests

Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji**

**93**

#### Elevated Temperature

Effect of Heat Treatment on Elevated Temperature Fat-

igue-Crack Growth Behavior of Two Heats of Alloy 718

(78-WA/PVP-3) (A) **My 95**

Elevated Temperature, Cyclic Loadings and Irradiation

Effects on Fatigue Crack of LMFBR Pressure Vessels

(79-PVP-59) (A) **S 98**

#### Elevated-Temperature Low-Cycle Fatigue

Hold-Time Sequence Effects on the Elevated-Temperature

Low-Cycle Fatigue of Type 304 Stainless Steel

(78-WA/PVP-2) (A) **My 95**

#### Elevated Temperature Tensile Properties

Elevated Temperature Tensile Properties of Alloyed Steels

Compared to ASME Design Stresses for Pressure

Vessels (78-Pet-16) (A) **Ja 98**

Elas, D. Impact of Clinch River Breeder Reactor Plant on

Breeder Research and Development Programs

(79-JPGC-NE-5) (A) **D 97**

Eliot, R. C. (editor) Coal Desulfurization Prior to Com-

busation (CB) **F 135**

Elishakoff, I. Wide-Band Random Axisymmetric Vibration

of Cylindrical Shells (79-APM-13) (A) **S 106**

Elkins, R. T. Innovative Design of Ceramic Utility Gas

Turbines (78-WA/GT-9) (A) **Ap 89**

Elliott, G. L. Some Static and Dynamic Properties of

Railway Wheels (78-WA/RT-4) (A) **My 92**

#### Ellipsoidal Inclusions

The Elastic Field in a Half Space Due to Ellipsoidal Inclusions

With Uniform Dilatational Eigenstrains (79-APM-29)

(A) **S 107**

#### Ellipsoidal Pressure Vessels

Design of Ellipsoidal and Toroidal Pressure Vessels to

Probabilistic Criteria (79-DET-110) (A) **D 106**

#### Elliptical Contacts

Elastohydrodynamic Lubrication of Elliptical Contacts for

Materials of Low Elastic Modulus II—Starved Conjunction

(78-Lub-1) (A) **Ja 93**

#### Elliptical Cracks

Part-Elliptical Cracks Emanating From Open and Loaded

Holes in Plates (78-WA/Mat-4) (A) **Mr 90**

#### Elliptical Holes

Stress Concentration in a Stretched Cylindrical Shell With

Two Elliptical Holes (78-WA/APM-18) (A) **My 104**

Ellis, J. A Further Note on Small-Scale Design Optimiza-

tion (79-DET-6) (A) **N 109**; Small-Scale Design Opti-

mization Using an Interactive Minicomputer

(78-WA/DE-9) (A) **Mr 85**

Ellis, W. E. Radiator Heat Rejection Options for Shuttle

Payloads (79-ENAS-18) (A) **O 87**

Elmaraghy, W. H. The LRC Coach Trucks and Suspension

(79-RT-4) (A) **Ag 96**

Elmendorf, R. G. Copernicus Questioned (C) **My 45**

Space Ain't Misbehavin' (C) **D 53**

Elmer, L. A. A High-Speed Time Sharing Rotary Switch

(78-WA/DE-20) (A) **Mr 86**

Elmhed, G. Industrial Type Gas Turbines for Offshore

Applications (79-GT-105) (A) **Ji 96**

#### Elongation

The Tension-Roller-Leveling Process—Elongation and

Power Loss (78-WA/Prod-18) (A) **My 99**

Elsaffawy, A. S. A Double Acting Variable Geometry

Combustor (79-GT-197) (A) **Ji 104**

Elsayed, Abdel-Ali M. Nassar Simulation of the Influence

of Bonding Materials on the Dynamic Behavior of

Laminated Composites (78-WA/APM-15) (A) **My 104**

Emara, A. A. A Numerical Investigation of Thermal Con-

vection in a Heat-Generating Fluid Layer (79-HT-103)

(A) **N 108**

Emara, T. K. Stresses in Elbows Created by Supporting

Lug Load (79-PVP-51) (A) **S 97**

#### Emergency Core Cooling

Reactor Vessel Blowdown: Determination of Emergency

Core Cooling Parameters (79-HT-83) (A) **N 105**

#### Emerging Technology

Century 2—ETC Progress Report (CU) **Ag 70**

Century 2 Emerging Technology Conference: Calls for

Papers (CU) **N 87**

Emery, A. F. Dynamic Propagation of Circumferential

Cracks in Two Pipes with Large-Scale Yielding

(79-PVP-81) (A) **S 99**

#### Emission Measurements

Environmental Effects of Burning Wastes (BTR) **S 61**

#### Emission Testing

Acoustic Emission Testing During A Burst Test of a Thick

Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94)

(A) **S 101**

#### Emissions

Air Consumption and Nitrogen Oxide Emissions of Charge

Cooled Engines (78-DGP-12) (A) **Ja 87**

Alternate Fuels and the Gas Turbine Catalytic Combustor

(79-GT-142) (A) **Ji 100**

Characteristic Time Correlations of Pollutant Emissions from

an Annular Gas Turbine Combustor (79-GT-194)

(A) **Ji 104**

Coal Desulfurization Prior to Combustion (CB) **F 135**

Combustion Modifications for the Control of Air Pollutant

Emissions from Coal Fired Utility Boilers

(78-WA/APC-7) (A) **Ap 103**

Combustion Modification Pollutant Control Techniques for

Industrial Boilers—The Influence of Fuel Oil Properties

and Atomization Parameters (78-WA/APC-13) (A) **My**

**96**

Control of Combustion Turbine Particulate Emissions

Verified by Improved Measurement Technology

(79-GT-189) (A) **Ji 104**

Development of an Industrial Gas Turbine Combustor

Burning a Variety of Coal-Derived Low Blu Fuels and

Distillate (79-GT-172) (A) **Ji 102**

Diesel Engine Emissions (ES) **Ag 19**

A Double Acting Variable Geometry Combustor

(79-GT-197) (A) **Ji 104**

The Effects of Diesel Fuel Properties on Performance,

Smoke, and Emissions (78-DGP-26) (A) **Ja 88**

The Effects of LBG Composition and Combustor Charac-

teristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Ji**

**103**

An Emissions First (ES) **Ja 18**

Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers

(78-WA/APC-1) (A) **Ap 102**

Environmental Assessment of Advanced Open Cycle Gas

Turbine Power Plants (79-GT-187) (A) **Ji 103**

EPA Best Available Control Technology Requirements for

Gas Plants and Related Facilities (78-Pet-18) (A) **Ja**

**98**

Evaluation of Particulate Emissions from Spreader Stoker

Boilers (78-IPC-Fu-1) (A) **Ja 91**

Fuel Effects in Recent Combustion Turbine Burner Tests of

Six Coal Liquids (79-GT-137) (A) **Ji 99**

The Influence of Cylinder Cutoff on Fuel Consumption and

Emissions of Diesel Engines (78-DGP-13) (A) **Ja 87**

Ongoing Development of a Low Emission Industrial Gas

Turbine Combustion Chamber (79-GT-203) (A) **Ji**

**104**

Operation and Emission of a Stoker-Fired Boiler While

Burning Refuse Derived Fuel and Coal Mixtures

(78-WA/APC-2) (A) **Ap 103**

Report of a Test Program to Update Equipment Specifi-

cations and Design Criteria for Stoker-Fired Boilers

(78-IPC-Fu-3) (A) **Ja 91**

Synopsis of Environmental Protection Agency Diesel Ex-

haust Characterization Project (78-DGP-29) (A) **Ja**

**89**

#### Emissions Assessments

Source Analysis Modeling for Environmental Assessment

(78-WA/APC-10) (A) **My 96**

#### Emission Characteristics

Characteristics of Combustion and NO<sub>x</sub> Formation in Large

Turbulent Diffusion Flames in Furnace (78-WA/Fu-2)

(A) **Ja 96**

#### Emission-Constrained Minimum Fuel Problem

Optimal Control Solution of the Automotive Emission-Con-

strained Minimum Fuel Problem with a Driveability

Constraint (78-WA/DSC-25) (A) **Ap 95**

#### Emissions Control

Controlling Emissions (ES) **Mr 23**

Field Tests of Industrial Stoker Fired Boilers for Emission

Control (78-WA/APC-9) (A) **My 96**

#### Emissions Evaluation

Operation of GT-225 Diffusion-Flame Combustor on Alter-

native Fuels Performance, Durability and Emissions

(79-GT-138) (A) **Ji 92**

#### Emission Level Evaluation

Tests of Various Coals, Coal-Oil Mixtures and Refuse

Derived Fuels in an Experimental Test Facility

(78-WA/APC-12) (A) **My 96**

#### Emissions Levels

The Effect of a Sample Lot of Fuel Injectors on Emissions

Levels of a Small Gas Turbine (79-GT-165) (A) **Ji 101**

#### Emission Measurement

Acoustic Emission Measurement and Analysis System

(BTR) **O 47**

#### Emission Rates

Trace Element Emissions from Coal-Fired Power Plants

- (78-WA/Fu-9) (A) **Je 97**
- Emissions Reduction**  
Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) **My 96**
- Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce Emissions (78-Pet-27) (A) **Ja 99**
- A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Ji 99**
- Emission Removal**  
Detergents Clean the Air (NB) **Ji 64**
- Emission Spectroscopy**  
Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**
- Emissions Standards**  
EPA Issues New Emission Standards (NR) **Ag 61**
- Municipal Incinerator an Environmental Success (BTR) **F 61**
- Emissivity Determination**  
Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**
- Emmerling, R. C.** Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine (78-DGP-10) (A) **Ja 87**
- Emmons, H. W.** (recipient) ASME Honorary Membership **Ja CR-12**
- Empirical Load-Response**  
Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**
- Employee Benefits**  
Fringe Benefits in the War on Taxes (PS) **Ap 72**
- Employee Performance**  
Employee Performance Appraisal (78-WA/Mgt-1) (A) **Je 90; Ji 32**
- Employee Retirement Accounts**  
When Will We Have LERA? (WW) **D 80**
- Employment Competition**  
Intensifying Competition Seen for Job Seekers (EN) **N 80**
- Employment Data**  
Survey Shows Engineering Graduates Have It Good (EN) **My 67**
- Employment Guidelines**  
Guidelines Available (PS) **O 67**
- Employment Outlook**  
Employment Outlook to Remain Fairly Good (EN) **S 72**
- Enclosed Spaces**  
Finite Element Analysis of Transient Natural Convection in Enclosed Spaces (79-HT-49) (A) **N 102**
- Enclosures**  
Experimental Investigation of Transient Asymmetric Heating in Vertical and Inclined Rectangular Enclosure (79-HT-90) (A) **N 106**
- The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**
- Endurance Tests**  
MHD Generator Runs 500 Hours (NB) **Ji 85**
- Endwall Shear Flow**  
The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Je 99**
- Endwall Surfaces**  
An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**
- Energetics**  
In Search of Optimum Fuel Savings (78-WA/Ener-1) (A) **Je 92**
- Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Je 92**
- A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Ener-3) (A) **Je 92**
- The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Ener-4) (A) **Je 92**
- Energy-Conserving Cogeneration-Performance, Economics and Legislation (78-WA/Ener-5) (A) **Je 92**
- Demonstration of Fuel Conservation in High Temperature Industrial Furnaces (78-WA/Ener-6) (A) **Je 92**
- Geothermal Power and Water Production Studies at the University of California (78-WA/Ener-7) (A) **Je 93**
- Economic Sizing of Steam Piping and Insulation (78-WA/Ener-8) (A) **Je 93**
- Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-9) (A) **Je 93**
- Energy**  
Another Point of View (ES) **S 29**
- Big Question for Solar Power (ES) **Ja 19**
- Bioenergy—The Sky's the Limit (IF) **Ji 55**
- Brownout for Nuclear Power? (NR) **Je 60**
- Cheap Hydrogen (ES) **Ji 21**
- Coal in Transition (ES) **O 19**
- Coal Combustion (C) **O 42**
- Coal Use Can Triple, But at Cost to Public and Industry (BTR) **O 48**
- The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**
- The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**
- A Comeback for Hydroelectric (ES) **S 21**
- Coming: New Coal Transportation Modes **S 36**
- Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**
- Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Je 94**
- Energy from Coal in the Year 2000 (BTR) **S 52**
- Energy and the Keystone Cops (WW) **Ag 68**
- The Energy Game (NB) **S 71**
- Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**
- Energy Tax Proposed (C) **My 46**
- Energy Technologies (ES) **Ap 21**
- Gas Turbines, Solar Systems—Opportunities for Clean Energy **My 76**
- Geothermal Energy (EN) **Ji 68**
- Geothermal Energy: Its Past, Present and Future Contributions to the Energy Needs of Man (CB) **Ji 106**
- High-Flying Ideas (C) **O 41**
- Laser Experiments Achieve High Fuel Compression (BTR) **S 58**
- Lithium Metal for Fusion (ES) **Ji 21**
- A Matter of Survival (C) **O 41**
- Multipurpose Wind Energy System (BTR) **S 59**
- Name Change (IF) **O 53**
- Oil Shale Utilization Method (IF) **O 52**
- Partners in Fusion (ES) **S 29**
- Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Je 96**
- Proposed Incentives Hinder Solar System Sales (NR) **S 70**
- Salting Away Energy (ES) **Ja 18**
- Solar Cells (EN) **D 78**
- Solar Energy Forecasts (NB) **Ji 64**
- Solar Ponds (IF) **S 65**
- Solar-Powered Pump (BTR) **O 43**
- Sun Potion (EN) **D 78**
- Ten-Megawatt Solar Facility (ES) **F 25**
- Turn Off the Lights! (ES) **Ap 21**
- Undersea Turbines (BTR) **Ji 49**
- Untapped Power Where River Meets Sea (BTR) **Ja 49**
- Uranium from Seawater (ES) **Ji 20**
- Wind Turbine Energy (EN) **Je 68**
- Energy Aid**  
Free Federal Energy Aid (NB) **D 75**
- Energy Alternatives**  
Ocean Thermal Energy Conversion (EN) **O 64**
- Shopping for Energy Alternatives (NR) **O 59**
- Energy Analysis**  
A Comprehensive Energy Analysis Applied to an Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**
- Energy Center**  
The Energy Center: New Alternative for Effective Energy Use (CB) **S 112**
- Energy Conservation**  
Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**
- Back to Wood (ES) **D 21**
- Call for Conservation from DOE (C) **Ap 44**
- Conserving Energy via Cogeneration **Ap 21**
- Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) (A) **Je 93**
- Efficient Machines Save Energy (NB) **Ap 65**
- Energy Conservation (C) **F 55**
- Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**
- Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**
- Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**
- The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ji 98**
- Saving Energy in the Home: Princeton's Experiments at Twin Rivers (CB) **Mr 98**
- "Smart Fixture" Uses Fiber Optics to Save Energy (BTR) **Ap 55**
- Energy Conservation Methods**  
Application of Energy Conservation Methods to Industrial Refrigeration Systems (78-IPC-Pwr-5) (A) **Je 91**
- The Role of State Government in Industrial Energy Conservation (78-TS-7) (A) **F 130**
- Energy-Conserving Cogeneration**  
Energy-Conserving Cogeneration-Performance, Economics and Legislation (78-WA/Ener-5) (A) **Je 92**
- Energy-Conserving Systems**  
Cogeneration—Some Hardware and System Design Parameters (78-IPC-Pwr-6) (A) **Ja 91**
- Energy Consideration**  
Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**
- Energy Consumption**  
Energy Consumption and Conservation in University Buildings (78-WA/PEM-4) (A) **My 95**
- A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) **Ja 92**
- U.S. vs. German Energy Consumption (C) **Ap 43**
- Energy Conversion**  
Alcoa OTEC (ES) **Ap 21**
- ... And So Is OTEC (ES) **Ja 19**
- Application of Low-Blue Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**
- Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Ji 101**
- Conceptual Design of Large Heat Exchangers for Ocean Thermal Energy Conversion (78-WA/HT-32) (A) **Mr 95**
- Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**
- Energy Conversion Engineering Conference (NR) **O 54**
- Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Ji 81**
- Heat Exchangers for OTEC (ES) **My 29**
- The Influence of the Bidding Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Ji 96**
- Low-Cost Thin-Film CdS-Based Solar Cells—Progress and Promise (79-Sol-5) (A) **Ag 92**
- Nitinal Heat Engines for Low-Grade Thermal Energy Conversion **My 28**
- Ocean Thermal Plant (BTR) **Je 51**
- Ocean Thermal Plants: Heat Exchangers Key Problem (BTR) **Ag 49**
- Solar Cell that Works in Dark (BTR) **Ja 42**
- Solar Energy Conversion: The Solar Cell (CB) **S 111**
- Solar Photovoltaic Power for Residential Use (79-Sol-11) (A) **Ag 93**
- Thermoelectric Generators for Solar Energy Conversions (78-Pet-75) (A) **F 127**
- Energy Converter**  
The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Ener-4) (A) **Je 92**
- Wind/Water Energy Converter (BTR) **My 48**
- Energy Cost Increase**  
The Fate of Fuel (NB) **Je 67**
- Energy Criteria**  
Comparative Analysis by the Displacement-Discontinuity Method of Two Energy Criteria of Fracture (79-APM-25) (A) **S 107**
- Energy Crunch**  
SRI President Sees Hope in Energy Crunch (NR) **My 88**
- Energy Data**  
Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**
- Energy Development**  
Wave and Tidal Power (IF) **Je 58**
- Energy-Efficient Buildings**  
Ten Designers Cited for Energy-Efficient Buildings (NR) **F 66**
- Energy Engineering**  
Master's Program in Energy Engineering (EN) **S 72**



## Energy Extraction

Energy Extraction Operations: Some Preliminary Results (79-PVP-38) (A) **Ag 106**

Geopressure-Geothermal Well (ES) **Ja 19**

## Energy Field

Wind Power Through Kites **Je 42**

## Energy Generation

A Review of Solid Waste Resource Recovery Technology: Appraisal of Operations and Economics with Assessment and Economics with Assessment of Newly-Developed Processing (79-ENAs-40) (A) **O 90**

## Energy Impact

A Discussion of the TRI-SEN M-300 Electronic Governor and its Possible Impact on Energy (78-DGP-22) (A) **Ja 88**

## Energy Index

Solar Energy Index (NB) **S 71**

## Energy Industry

Geothermal Energy in the Western United States: Innovation Versus Monopoly (CB) **F 134**

## Energy Invention Funding

On Energy Invention Funding (C) **Ji 38**

## Energy Management

The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) (A) **My 95**

Energy Management Degree (EN) **Mr 85**

Micromouse: A Robot with Unlimited Future (BTR) **S 51**

## Energy Needs

Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 106**

## Energy Options

Diversifying Our Energy Options (C) **D 54**

## Energy Plan

The National Energy Plan and Solar Energy Technology (78-TS-2) (A) **F 129**

## Energy Plantations

Hawaiian Sugarcane Energy Plantations (79-Sol-31) (A) **Ag 96**

Experimental Cultivation of Giant Kelp in Oceanic Environments (79-Sol-30) (A) **Ag 95**

## Energy Policies

ASME Energy Policy **Mr 73**

Energy Panel Calls for Consistent Government Energy Policies (NR) **My 64**

Energy Policy (CB) **Ji 106**

A National Energy Policy **Ag 36**

## Energy Policy and Conservation Act (EPCA)

Glad Tidings! (Es) **Ja 18**

## Energy Pricing

OPEC—Meet UTECI (C) **Ji 40**

## Energy Principle

Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**

## Energy Problems

Energy Problems and Urban and Suburban Transport (CB) **Ap 104**

## Energy Production

Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**

Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and the Various Kinds of Energy (79-GT-115) (A) **Ji 97**

Texas Takes Stock (ES) **Ja 18**

## Energy Recovery

Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**

## Energy Recovery Performance

Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**

## Energy Reduction

Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy (78-WA/PEM-3) (A) **My 95**

## Energy Report

Solar-Energy Bibliography (BTR) **Ap 57**

## Energy Resources

Air Policy Analysis for the Development of Western Energy Resources (78-TS-4) (A) **F 129**

Recovery of Wasted Heat with Centralized and Distributed

Heat Pump Systems (78-WA/HT-53) (A) **Ap 93**

Renewable Energy Resources, Full Reports to the Conservation Commission (CB) **Je 104**

## Energy Saver

High Energy at Fermilab (ES) **S 20**

## Energy-Saving Optics

Energy-Saving Optics (BTR) **Mr 48**

## Energy-Saving Thermostat

Energy-Saving Thermostat (ES) **F 24**

## Energy Savings

Award-Winning Passive Solar House (BTR) **Je 47**

Chlorine and Energy Savings (ES) **My 20**

Citations for Energy Savings (ES) **Ag 19**

Closed Loop Source Monitoring Saves Energy and Money (78-WA/APC-6) (A) **Ap 103**

Cogeneration Produces Savings (BTR) **Ap 51**

An Energy-Saving Appliance (ES) **Ji 20**

Reynolds Pushes Energy Savings (ES) **D 21**

Summer Cooling with Winter Ice (BTR) **D 55**

## Energy Shortages

Magnetic Heat Pump (BTR) **Je 48**

Politicians and Engineers Debate U.S. Shortage of Innovation and Energy (NR) **Ag 56**

## Energy Sources

Alternative Energy Sources and the Developing Nations (78-WA/TS-3) (A) **Je 94**

Environmental Effects of Burning Wastes (BTR) **S 61**

Geopressured Water/Gas as Potential Energy Source (BTR) **Ap 48**

Heat Pipe Mirrors for High-Power Laser **My 34**

Landfill Methane: First U.S. Industry Use (BTR) **D 62**

Onset of Convection in Fluid Layers with Nonuniform Volumetric Energy Sources (79-HT-100) (A) **N 107**

Renewable Energy Sources (C) **S 50**

World's Largest Laser (BTR) **Ja 43**

## Energy Standards

Pre-Insulated Panel, U Factors, and Energy Use (BTR) **My 52**

## Energy Storage

Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Ji 95**

A Flywheel Energy Storage and Conversion System for Solar Photovoltaic Applications (79-Sol-1) (A) **Ag 92**

Low-Temperature Thermal Energy Storage: A Survey (BTR) **N 59**

Making the Desert Bloom (ES) **D 21**

Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

## Energy Strategies

Non-Nuclear Futures: The Case for an Ethical Energy Strategy (CB) **N 118**

## Energy Study

Squeezing Oil Out of a Slove (NB) **D 75**

## Energy Supplies

Endless Fuel from Seawater (BTR) **Mr 52**

## Energy Systems

Advances in Energy Systems and Technology (CB) **Ji 106**

Community Heat Pumps (ES) **My 20**

The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**

Home Heat and Hot Water from Ice (BTR) **Ap 46**

Hydrogen as an Automotive Fuel (BTR) **Je 52**

Hydrogen Energy Systems (ES) **N 32**

## Energy Tax Credits

Solar Incentive from National Energy Act (BTR) **Ap 55**

## Energy Technologies

Accelerating the Commercialization of New Technologies (78-WA/TS-4) (A) **Je 94**

Building Confidence (ES) **S 21**

Converting Coal to Liquid/Gaseous Fuels **Je 34**

The Sixth Energy Technology Conference and Exposition (NR) **F 68**

## Energy Transition

Position Paper Found Wanting (C) **N 55**

## Energy Trends

Transportation Energy Trends (BTR) **Ji 41**

## Energy Utilization

GUD-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Ji 98**

The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**

Engel, F. C. Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**

Engel, P. K. Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**

Engelberger, J. F. Robot Arms for Assembly (78-WA/DSC-37) (A) **Ap 99**

Engelman, H. W. Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Ja 88**

## Engine Airfoils

Friction Damping of Resonant Stresses in Gas Turbine Engine Airfoils (79-GT-109) (A) **Ag 99**

## Engine Behavior

An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Ji 94**

## Engine Concept

Nitinol Engines (C) **S 50**

## Engine Design

The Effect of a Sample Lot of Fuel Injectors on Emissions Levels of a Small Gas Turbine (79-GT-165) (A) **Ji 101**

New Rankine-Cycle Engine Design (BTR) **N 88** (EN) **D 77**

Optimal Control of Turbine Engines (78-WA/DSC-33) (A) **Ap 99**

Physical Characterization of Particulate Material from a Turbine Engine (79-GT-179) (A) **Ji 102**

Research for Better Fuel Efficiency (BTR) **D 59**

## Engine Development

Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Ji 104**

Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**

Development of Piston Rings for High Speed Engines in Europe (78-DGP-18) (A) **Ja 88**

Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**

## Engine Efficiency

Ceramic Applications in Turbine Engines (79-GT-75) (A) **Ji 94**

## Engine Evaluation

Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**

Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Ji 100**

Mitsubishi-Man Diesel Engine (F) **O 53**

## Engine Evolution

The Growth and Evolution of the TPE331 (79-GT-164) (A) **Ji 101**

## Engine Generators

Solar Energy Concentrators (ES) **F 24**

## Engine Life Support Systems

Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **My 93**

## Engine Life Usage

Engine Life Usage Experience of YF17/YJ101 Flight and Ground Testing (78-WA/GT-11) (A) **Ap 89**

## Engine Maintenance

Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**

## Engine Performance

A Design Review of Ceramic Components for Turbine Engines (79-GT-163) (A) **Ji 103**

An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Ja 86**

## Engine Performance Data

The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) (A) **Ja 88**

## Engine Requirements

The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**

## Engine Simulation

The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**

## Engine Sound Measurement

Sound Power Levels of Large Engines Measured in Semi-Reverberant Environments (78-DGP-20) (A) **Ja 88**

## Engine Speeds

An Accelerated Durability Test Program for Diesel Truck Engines (78-DGP-23) (A) **Ja 88**

## Engine Vibration

Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 88**

## Engineering

Engineering as Part of Science (C) **F 55**

What is Engineering? Who is an Engineer? (Ed) **Mr 21**

## Engineering Administration

Improving Productivity Through Engineering Administration (78-WA/Mgt-3) (A) **Je 91**



## Engineering Approach

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Jl 95**

## Engineering Considerations

Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Jl 90**

## Engineering Curriculum

New Dean Plans for Growth (EN) **Mr 85**

## Engineering Data

Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Jl 103**

## Engineering Degrees

Degrees, Jobs, and Salaries Increased in 1978 (EN) **D 76**  
Increases in Degrees, Jobs, and Salary in 1978 (EN) **Mr 64**

## Engineering Design

The Effects of H<sub>2</sub>S on Engineering Design of Oil and Gas Wells and Facilities (78-Pet-5) (A) **Ja 97**

Latest Engineering in Tank Car Design (78-WA/RT-11) (A) **My 93**

Microcomputer Application in Engineering Design (78-DET-85) (A) **Ja 90**

PMS—An Effective Management System for Power Plant Engineering (78-WA/Mgt-6) (A) **Je 91**

Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Jl 104**

The Special Requirements for Nuclear Application Standby Diesel-Generator Sets (78-DGP-6) (A) **Ja 86**

Tulane Hovercraft (EN) **Je 69**

## Engineering Development

Lofin Petrochemical Industry (IF) **My 58**

## Engineering Dynamics Analysis

Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**

## Engineering Education

Engineering Schools (C) **My 44**

Joint Engineering Program (EN) **S 73**

Lehigh Establishes Research Institute (EN) **Je 68**

Master's Program in Energy Engineering (EN) **S 72**

Update: Mechanical Engineering Education in the People's Republic of China **O 36**

WAM Sees Big Turnout for M.E. Department Heads and Students (EN) **F 72**

## Engineering Environment

Measurement of Performance in an Engineering Environment (78-WA/Mgt-8) (A) **Je 91**

## Engineering Ethics

Engineering Ethics **N 36**

## Engineering Evaluation

Seeing the World the Way It Is (C) **Jl 39**

## Engineering Expertise

U.S. Engineers Will Aid Developing Nations (NR) **O 59**

## Engineering Field

Management of the Product Liability Engineer (78-WA/Mgt-4) (A) **Je 90**

## Engineering Fundamentals

Engineering Fundamentals for Professional Engineers Examinations (CB) **D 109**

## Engineering Goals

Target: Ends as Well as Means **Ap 74**

## Engineering Graduates

Employment Outlook to Remain Fairly Good (EN) **S 72**

Survey Shows Engineering Graduates Have it Good (EN) **My 67**

## Engineering Humanism

The Need for Humanism in Engineering **Mr 69**

## Engineering Literature

Technical Publications (TL) **D 108**

## Engineering Majors

Best Berkeley Students are Engineering Majors (EN) **D 77**

## Engineering Managers

The Impact of Manufacturing Technology on the Engineering Manager (79-DE-4) (A) **Ag 101**

## Engineering Management

Skills Vital to Successful Managers (CB) **S 111**

## Engineering Minorities

Empathy Evoked (C) **Jl 39**

GEM Increases Stipend (EN) **S 72**

Minorities in Engineering—Pitfalls and Progress (NR) **F 69**

## Engineering Modeling

Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers (78-WA/APC-1) (A) **Ap 102**

## Engineering Personnel

Engineering Engineers for Maximum Performance (NR) **Mr 58**

## Engineering Practice

Starting and Managing Your Own Engineering Practice (CB) **My 107**

## Engineering Problems

Matters of Judgment (C) **Je 44**

Students Challenged to Improve Model Pumps (EN) **My 70**

## Engineering Profession

The Black ME at Tuskegee Institute **My 38**

Engineers' Contributions (C) **Jl 29**

Engineers: Professionals, Professional Employees, or Employees? (PS) **F 77**

More on Registration (C) **My 47**

Recognizing the Capable (C) **My 47**

## Engineering Program

The Development of the Olympus "C" Gas Generator (79-GT-122) (A) **Jl 97**

## Engineering Projects

Management of Engineering Projects (CB) **F 134**

## Engineering Research Grants

Engineering Research Grants (NR) **O 57**

## Engineering Responsibility

Engineering Responsibility (C) **Ag 43**

Letter to a Student (WW) **Je 72**

## Engineering Salesmanship

Architectural and Engineering Salesmanship (CB) **Je 104**

## Engineering Schools

Rating the Engineering Schools (EN) **Ap 67**

## Engineering Science

In-Service Inspection (ISI)—The Role of the Third-Party Consultant **Ap 37**

## Engineering Societies

Why Do We Need an AEA? (PS) **D 81**

## Engineering Statistics

Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) (A) **Mr 90**

## Engineering Structure

Iron Bridge Celebrates 200th Anniversary (NR) **S 70**

## Engineering Students

Twenty-One Promising Engineering Students: 25 Years Later (NR) **N 76**

## Engineering Surfaces

Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94**

## Engineering Units

Units for Engineering (C) **Je 45**

## Engineering Work Force

Mechanical Engineers Top Most-Wanted List (NR) **Je 64**

## Engineers

The Changing Technical Life of Engineers **Ja 29**

Encyclopedic Dictionary of Mathematics for Engineers and Applied Scientists (CB) **Ap 104**

The Engineer in Transition to Management (CB) **N 119**

Have Engineers Been Replaced by Computers (79-PVP-10) (A) **Ag 104**

Politicians and Engineers Debate U.S. Shortage of Innovation and Energy (NR) **Ag 56**

Refugee Engineers, Aided by ASME Members, Begin Careers in New World **Je 80**

Scientists Must Write: A Guide to Better Writing for Scientists, Engineers and Students (CB) **N 118**

What Every Engineer Should Know About Patents (CB) **D 100**

## Engineers' Advancement

Advancement by Judgement **F 28**

## Engineers' Guide

The Practicing Scientist's Handbook: A Guide for Physical and Terrestrial Scientists and Engineers (CB) **F 134**

## Engineers' Involvement

A Pragmatic Approach to the Engineers Involvement in Public Policy Making (78-WA/TS-1) (A) **Je 94**

## Engineers' Judgment

Advancement by Judgment (78-WA/Mgt-2) (A) **Je 90**

## Engineers' Pensions

ASME Members and Pensions (PS) **Je 73**

## Engineers' Responsibility

America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 94**

## Engineers' Salaries

Engineers' Salaries **My 22**

Salaries Rise Sharply (EN) **Ja 60**

## Engines

Aircraft Gas Turbine Engine Technology (CB) **Je 104**

Augmented Vectored Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Je 96**

Combustion in a Coal-Fired Internal Combustion Engine: A

Simple Theory (78-WA/Fu-1) (A) **Je 96**

Computer-Perfect Engines (BTR) **Je 54**

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**

An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**

Heavy-Duty LPG Engine (IF) **Ap 80**

Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**

Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 90**

England, G. C. Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

Enhancements

Computational Enhancements to the Method of Multipliers (79-DET-77) (A) **N 119**

Ennis, D. Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**

## Enterprise

Sharing the Dream (C) **N 55**

A Winning Combination—Humanism and Enterprise **Ag 34**

## Entrainment

Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**

## Environment

Of Arsenic and Old Mace (BTR) **O 48**

## Environmental Assessment

Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Jl 103**

Environmental Assessments of Small Scale Fluid Bed Combustors (79-JPGC-Pwr-10) (A) **D 98**

Source Analysis Modeling for Environmental Assessment (78-WA/APC-10) (A) **My 96**

## Environmental Control Systems

Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**

## Environmental Corrosion

Corrosion Engineering (CB) **O 97**

## Environmental Effects

A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**

The Energy Game (NB) **S 71**

Environmental Effects of Burning Wastes (BTR) **S 61**

## Environmental Engineering

Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**

## Environmental Law

Laws of the Land (NB) **Ag 62**

## Environmental Pollution

A Perspective of Environmental Pollution (CB) **D 110**

## Environmental Protection Agency

Air Policy Analysis for the Development of Western Energy Resources (78-TS-4) (A) **F 129**

Detergents Clean the Air (NB) **Jl 84**

Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

Environmental Laws—Fundamental Tensions (WW) **Ap 70**

EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-18) (A) **Ja 96**

How ASME Takes a Stand (WW) **F 78**

Our "Do-Something" EPA (C) **Ap 43**

Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project (78-DGP-29) (A) **Ja 89**

Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**

## Environmental Regulations

The Difficulties in Phasing Out Oil (ES) **F 24**

The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Jl 91**

Pollution Control Costs (NB) **Ap 64**

## Environmental Research

New Environmental Sciences Laboratory at ORNL (EN) **Ja 88**

## Environmental Standards

Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Jl 104**

## Environmental Success

Municipal Incinerator an Environmental Success (BTR) **F 81**

## Environmental Support Systems

Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**

## Environmental Systems

Aerospace Systems Analysis Approach to Energy Conservation in Heating, Ventilating and Air Conditioning Systems (79-ENAs-1) (A) **O 86**

Aircraft Humidification System Development (79-ENAs-8) (A) **O 87**

Application of Ion-Drag Air Jets to Augment Airborne Equipment Cooling (79-ENAs-12) (A) **O 87**

Applications of the Thermoelectrically Integrated Membrane Evaporator Subsystem (79-ENAs-46) (A) **O 91**

Automated Biomonitoring Applications to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Biosensing for Watershed Management (79-ENAs-41) (A) **O 89**

Bosch: An Alternate CO<sub>2</sub> Reduction Technology (79-ENAs-32) (A) **O 89**

Chilled Recirculation ECS for Aircraft (79-ENAs-5) (A) **O 86**

Closed-Ecology Life Support Systems (CELSS) for Long-Duration, Manned Missions (79-ENAs-27) (A) **O 88**

Controlled-Environmental Agricultural Systems as Food Sources for Large Space Habitats (79-ENAs-30) (A) **O 89**

Cooling a Radioisotope Power Source in the Space Shuttle Orbiter (79-ENAs-44) (A) **O 90**

Design, Analysis, and Tests of a Shuttle-Type Heat-Pipe-Cooled Leading Edge (79-ENAs-20) (A) **O 88**

Design and Development of a Trace Contaminant Removal Canister for Spacelab (79-ENAs-16) (A) **O 87**

Design of Molded Fabric Components for a Space Suit (79-ENAs-46) (A) **O 90**

Design of a One-Year Lifetime, Spaceborne Superfluid Helium Dewar (79-ENAs-23) (A) **O 88**

Development and Characterization of an Evaporation Cold Plate for Thermal Control of Avionic Equipment (79-ENAs-4) (A) **O 86**

Development of the Electrochemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAs-33) (A) **O 89**

Development of an Improved Sabatier Reactor (79-ENAs-36) (A) **O 88**

Development of Oil Content Monitors for Navy Ships (79-ENAs-42) (A) **O 90**

Development of a Space Shuttle Plant Growth Unit (79-ENAs-19) (A) **O 88**

EDC—A Regenerable CO<sub>2</sub> Removal Subsystem for an Enhanced Capability Orbiter (79-ENAs-34) (A) **O 89**

Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAs-45) (A) **O 90**

Evolution of the Shuttle Extravehicular Mobility Unit (79-ENAs-24) (A) **O 88**

Food System Galley for Space Shuttle (79-ENAs-47) (A) **O 91**

Food Technology in Space Habitats (79-ENAs-31) (A) **O 88**

"Hard Hat" EVA, Personal Equipment to Support Large Scale Construction in Space (79-ENAs-43) (A) **O 90**

Helicopter Environmental Control—Commercial and Military Solutions (79-ENAs-35) (A) **O 89**

High-Pressure Protective System Technology (79-ENAs-15) (A) **O 87**

Influence of Fiber Loading on Thermal Ablation of PTFE (79-ENAs-3) (A) **O 86**

Environmental Control System Design for the Tomahawk Cruise Missile (79-ENAs-7) (A) **O 86**

Evolutionary Possibilities of the Spacelab Thermal Control Systems Towards Space Stations (79-ENAs-11) (A) **O 87**

Future Requirements for Environmental Control Systems in Naval Aircraft (79-ENAs-9) (A) **O 87**

Modular Heat Pipe Radiators for Enhanced Shuttle Mission Capabilities (79-ENAs-17) (A) **O 88**

Modular Heat Pipe Radiators for Enhanced Shuttle Mission Capabilities (79-ENAs-17) (A) **O 88**

Modularity and Optimization in Fluid Loop Radiator Systems (79-ENAs-37) (A) **O 90**

Optimization of Large Heat Pipe Radiators for Long Life Space Heat Rejection Systems (79-ENAs-25) (A) **O 88**

Optimum Design of Spacecraft Radiators for Large Capacity or Long Duration Mission Applications (79-ENAs-10) (A) **O 87**

Orbital Service Module Thermal Control System Design (79-ENAs-22) (A) **O 88**

Ozone-UV Treatment for Oily Wastewater Cleanup (79-ENAs-9) (A) **O 90**

Radiator Heat Rejection Options for Shuttle Payloads (79-ENAs-18) (A) **O 87**

Recycling Plant, Human and Animal Wastes to Plant Nutrients in a Closed Ecological System (79-ENAs-29) (A) **O 89**

A Review of Solid Waste Resource Recovery Technology: Appraisal of Operations and Economics with Assessment and Economics with Assessment of Newly-Developed Processing (79-ENAs-40) (A) **O 90**

Shuttle Orbiter Flash Evaporator (79-ENAs-14) (A) **O 87**

A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAs-26) (A) **O 89**

A Study of the Reduction of Carbon Dioxide in a Silent Electric Discharge (79-ENAs-13) (A) **O 87**

Test and Analysis of the ASALM-PTV Insulated Combustion Chamber (79-ENAs-21) (A) **O 88**

Thermal Control Systems for Pod-Mounted Avionics (79-ENAs-2) (A) **O 86**

Thermal Design for the Infrared Astronomical Satellite (IRAS) Telescope System (79-ENAs-38) (A) **O 90**

Use of Phytotrons in Assessing Environmental Requirements for Plants in Space Habitats (79-ENAs-28) (A) **O 89**

The Use of a Positive Displacement Air Cycle Machine in a Closed-Loop Environmental Control System (79-ENAs-6) (A) **O 86**

**Environmental Technology Exposition**

Envitec '80 (IF) **D 68**

**Epicyclic Gear Trains**

Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) (A) **Mr 85**

**Epstein, M.** Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

**Equipment Design**

Automated Bagging Machine (IF) **Jl 54**

Effect of Composition of Melting Behavior on Coal Ash (78-WA/CD-2) (A) **Ja 91**

**Equipment Design Competition**

Equipment Design Competition for Waste Refuse (EN) **Ja 86**

**Equipment Development**

Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Jl 95**

**Equipment Nozzles**

Piping Reaction on Active and Non-Active Equipment Nozzles (79-PVP-28) (A) **Ag 105**

**Equipment Preservation**

Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce Emissions (78-Pet-27) (A) **Ja 99**

**Equipment Specifications**

Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC/Fu-3) (A) **Ja 91**

**Eralp, O. C.** Compressor Response to Spatially Repetitive and Non-Repetitive Transients (79-GT/Isr-14) (A) **O 83**

**Erdman, A. G.** Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**

**Erection Tolerances**

Erection Tolerances for Power Piping Systems (79-PVP-21) (A) **Ag 105**

**Erez, A.** Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monoactive Electrocoagulation (78-WA/HT-66) (A) **Ap 93**

**Erian, F. F.** Generalized Laminar Heat Transfer From the Surface of a Rotating Disk (78-WA/HT-29) (A) **Mr 95**

**Erickson, A. F.** Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications (78-WA/GT-16) (A) **Ap 90**

**Erosion**

Study of Metals Erosion in High Temperature Coal Gas Streams (79-GT-88) (A) **Ag 98**

Velocity Exponent for Erosion and Noise Due to Cavitation

(79-FE-9) (A) **O 85**

## Erosion Resistant Coating System

Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 89**

## Error Minimization

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Ja 90**

**Erskine, D. J.** Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**

**Erturk, T.** Use of Forming Limit Criteria in Forging Complex Shapes from Metal-Matrix Composites (78-WA/Mat-2) (A) **Mr 89**

**Ervolina, T. S.** Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Jl 91**

**Eshel, A.** Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) (A) **Ja 95**

**Eskesen, J. H.** A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Ener-3) (A) **Ja 92**

**Esmailzadeh, E.** Compact Self-Damped Pneumatic Isolators for Road Vehicles (79-DET-101) (A) **D 105**

## Estimation Theory

Estimation Theory and Its Role in Optimal Control (78-WA/DSC-2) (A) **Ap 93**

## Etching Surfaces

A New Method for Etching Surfaces of Bearings and Other Machine Elements (79-Lub-9) (A) **D 103**

## Ethyl Alcohol

Alcohol's Promise (C) **F 55**

## Ethylene Pipelines

Hot Tapping of Ethylene Pipelines (78-Pet-1) (A) **Ja 97**

**Etlson, E.** Hydrodynamic Effects in a Misaligned Radial Face Seal (78-Lub-12) (A) **Ja 94**

**Etlson, I.** The Effect of Coning on Radial Forces in Misaligned Radial Face Seals (79-Lub-17) (A) **D 103**

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) (A) **Ja 94**

Squeeze Effects in Radial Face Seals (79-Lub-10) (A) **D 103**

## Evacuated Cylindrical Collectors

Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Ja 94**

## Exhausting Fuel Savings

In Search of Optimum Fuel Savings (78-WA/Ener-1) (A) **Ja 92**

## Evaluation Procedure

Evaluation of Alternative Steam Sources for Industrial Cogeneration (79-IPC-Pwr-2) (A) **D 101**

## Evaluation Process

Evaluate Satellite Power Systems (BTR) **O 47**

Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Jl 94**

On Energy Invention Funding (C) **Jl 38**

## Evaluation Program

Soot and the Combined Cycle Boiler (79-GT-67) (A) **Jl 93**

## Evaluation Study

Evaluating Wind Power (ES) **F 25**

## Evaluation Technique

Evaluation of Industrial Boiler Operator Training Experience (79-IPC-Pwr-5) (A) **D 101**

## Evaporating Floating Lens

Heat Transfer to an Evaporating Floating, N-Pentane Lens (79-HT-13) (A) **O 92**

## Evaporative Cooling

Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Ja 92**

## Evaporators

Optimization of Two Stage Evaporators for Minimizing Rad-Waste Entrainment (79-DET-26) (A) **N 111**

Shuttle Orbiter Flash Evaporator (79-ENAs-14) (A) **O 87**

Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**

**Every, R. L.** Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce Emissions (78-Pet-27) (A) **Ja 99**

## Evolution

Does Flu Come from Halley's Comet **Ag 47**

## Evolutionary Theory

Down on Darwin (C) **O 42**

## Exhaust Air Heat Exchangers

Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**

## Exhaust Emissions

Application of Sulzer 12ASV 25/30 Diesel Engines to M-K

TE70-4S Locomotives (78-DGP-15) (A) **Ja 87**

#### **Exhaust Gas**

Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Ji 101**  
Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Ji 101**  
NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**

#### **Exhaust Gas Emissions**

A Double Acting Variable Geometry Combustor (79-GT-197) (A) **Ji 104**

#### **Exhaust Plume**

Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **Ji 103**

#### **Exothermic Oxidation**

Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**

#### **Experimental Cultivation**

Experimental Cultivation of Giant Kelp in Oceanic Environments (79-Sci-30) (A) **Ag 95**

#### **Experimental Data**

Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**

#### **Experimental Determination**

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) **Ja 93**

#### **Experimental Research**

Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**

#### **Experimental Results**

First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Ji 94**

#### **Experimental Study**

An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**

Experimental Study of the Inflow Effects on a Natural Convection Heat Sink (78-WA/HT-30) (A) **Ap 92**

Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**

Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**

#### **Experimental Test Facility**

Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**

#### **Explosives**

Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**

Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) (A) **Ag 106**

#### **Exposure Testing**

Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**

#### **Expulsion Tanks**

High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**

#### **External Pressure**

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**

#### **External Radiation**

Fire Characteristics Under the Influence of External Radiation (79-HT-71) (A) **N 104**

#### **Extraterrestrial Matter**

Does Flu Come from Halley's Comet **Ag 47**

#### **Extravehicular Activity**

"Hard Hat" EVA, Personal Equipment to Support Large Scale Construction in Space (79-ENAS-43) (A) **O 90**

#### **Extravehicular Mobility Unit**

Evolution of the Shuttle Extravehicular Mobility Unit (79-ENAS-24) (A) **O 88**

#### **Extremal Distributions**

Application of Extremal Distributions in the Design of Thermal Systems (79-DET-5) (A) **N 109**

#### **Extrusion Process**

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**

#### **Eye-Motion Sensor**

Eye-Controlled Switch (C) **N 60**

Ezzat, H. A. Analysis of Dynamically Loaded Floating-Ring Bearings for Automotive Applications (79-Lub-41) (A) **D 103**

## **F**

#### **Fabric Construction**

Twistless Yarns and Woven Fabrics Made Therefrom (79-Tex-4) (A) **D 99**

#### **Fabric Filtration**

Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**

#### **Fabric Hand Measurement**

Revised Theory for the Quantitative Analysis of Fabric Hand (79-Tex-5) (A) **D 100**

#### **Fabric Performance**

Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Tex-5) (A) **Ja 92**

#### **Fabric Properties**

Measurement of the Thermal Insulation Properties of Fabrics (79-Tex-3) (A) **D 99**

Fabris, G. The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**

Fabunmi, J. A. Forced Vibrations of a Single Stage Axial Compressor Rotor (79-GT-108) (A) **Ag 100**

#### **Face Coating Materials**

Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 98**

#### **Face Seals**

Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**

Hydrodynamic Effects in a Misaligned Radial Face Seal (78-Lub-12) (A) **Ja 94**

A Mixed Friction Hydrostatic Face Seal Model With Phase Change (79-Lub-5) (A) **D 102**

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) (A) **Ja 94**

Squeeze Effects in Radial Face Seals (79-Lub-10) (A) **D 103**

#### **Factorial Experimentation**

Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**

#### **Factory Design**

Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**

#### **Failure Analysis**

ASME Case Problem—Design Defect in a Leaf Spring (78-WA/DE-18) (A) **Mr 88**

Corrosion Failures: Three Case Histories and Their Solutions (78-WA/Aero-23) (A) **Ap 102**

Failure Analysis of a 414-MPa (60,000-psi) Isostatic Press (79-PVP-18) (A) **Ag 105**

Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**

#### **Failure Analysis Procedure**

Scanning Microscopy in Microcircuit Failure Analysis (78-WA/Aero-22) (A) **Ap 102**

#### **Failure Mode**

Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**

#### **Failure Mode Analysis**

Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**

#### **Failure Penalties**

Multi-Tool Machining Analysis—Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**

#### **Failure Prevention**

Failure Prevention, Vibration Analysis, and Design Automation **N 99**

#### **Failure Probability**

Optimum Structural Design Under Constraint on Failure Probability (79-DET-114) (A) **D 106**

#### **Failure Rate**

Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**

Fair, C. E. Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**

Falk, P. T. Inelastic Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant

(79-PVP-25) (A) **Ag 106**

#### **Fan Rotors**

Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Ja 98**

#### **Fans**

Noise Generated from Non-Uniform Clearance of Turbo-Compressors and Fans of Aircraft (79-DET-30) (A) **N 111**

A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) (A) **Mr 90**

Unsteady Flow Phenomena in Multiple Disk Fans (79-FE-10) (A) **O 85**

Fantino, B. Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**

Farg, I. H. Temperature Profiles in Combustion Gases by Inversion: Review and Approach (79-HT-21) (A) **O 93**

Farr, M. K. Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 89**

Farrall, R. A. Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Blu Fuels and Distillate (79-GT-172) (A) **Ji 102**

#### **Fast Breeder Reactors**

Experience in the use of FBR Core Component Structural Design Criteria as Applied FFTF (79-PVP-48) (A) **S 97**

#### **Fast Flux Test Facility**

Closed Loop In-Reactors Assembly (CLIRA)—A Fast Flux Test Facility Test Vehicle (78-WA/NE-6) (A) **Mr 88**

The Value of Prototype Testing in the Development of In-Vessel Handling Machine for FFTF (78-WA/NE-3) (A) **Mr 87**

#### **Fastener Holes**

Measurement of the Elastic-Plastic Boundary Around Cold-worked Fastener Holes (78-WA/APM-2) (A) **My 103**

#### **Fatigue**

Fatigue Strength Calculation of Prestressed Pressure Vessels for Isostatic Presses (79-PVP-117) (A) **S 104**

Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90**

#### **Fatigue Crack**

Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBR Pressure Vessels (79-PVP-59) (A) **S 98**

#### **Fatigue-Crack Growth Behavior**

Effect of Heat Treatment on Elevated Temperature Fatigue-Crack Growth Behavior of Two Heats of Alloy 718 (78-WA/PVP-3) (A) **My 95**

#### **Fatigue Damage**

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**

#### **Fatigue Data**

A New Cumulative Damage Model—Part 3 (78-WA/APM-19) (A) **My 104**

#### **Fatigue Design Equations**

A Man-Machine Interactive Method for the Development of the Fatigue Design Equations (79-DET-96) (A) **D 104**

#### **Fatigue Evaluation**

A General Fatigue Evaluation Method (Elastic Stress or Plastic Strain with Constant or Varying Principal Direction) (79-PVP-77) (A) **S 99**

#### **Fatigue Life**

Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji 93**

Fatigue Life for Small Gear Boxes (79-DET-49) (A) **N 114**

Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Ji 91**

Measurement of the Elastic-Plastic Boundary Around Cold-worked Fastener Holes (78-WA/APM-2) (A) **My 103**

#### **Fatigue Life Evaluation**

Fatigue Life Evaluation of Nuclear Components and Piping (79-PVP-16) (A) **Ag 104**

#### **Fatigue Strength**

Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Ji 95**

A Study of Induction Hardening Hole Surfaces in Clearance Fit Joints to Improve Fatigue Strength (79-DE-10) (A) **Ag 102**

#### **Fatigue Test Data**

A Comparison of Fatigue Test Data on Piping with the ASME Code Fatigue Evaluation Procedure (79-PVP-92) (A) **S 100**



## Fatigue Tests

- A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**  
**Fawzy, I. A.** Simplified Stability Criterion for Nonconservation Systems (79-APM-19) (A) **S 107**  
**Fearson, J. G.** Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives (78-DGP-15) (A) **Ja 87**

## Federal Energy Aid

- Free Federal Energy Aid (NB) **D 75**

## Federal Trade Commission

- FTC in Hot Water (WW) **N 84**

## Feedback Controllers

- Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**  
Some Connections Between Modern and Classical Control Concepts (78-WA/DSC-20) (A) **Ap 96**

## Feedback Controller Design

- A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**

## Feedback Control Systems

- Resonance Equalization in Feedback Control Systems (78-WA/DSC-24) (A) **Ap 96**

## Feedback Gain Design

- Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**

## Feedstock

- Feedstock Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Ja 98**

- Fellberg, M.** Piston Ring Scuffing-A Multi-Parameter Investigation (78-DGP-14) (A) **Ja 87**

## Feed-Water Pumping Equipment

- Design and Application of Feed-Water Pumping Equipment for Improved Availability in Cyclic Operation (79-JPGPC-Pwr-8) (A) **D 97**

## Fellowships

- Fellowships in India (EN) **My 67**  
Postdoctoral Fellowships for Minorities (EN) **D 77**

- Fender, D. A.** Noise Level Considerations Associated with Power Plant Condenser Steam Dump (79-PVP-9) (A) **Ag 104**; A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Ja 96**

- Fennay, J. W.** Pipe Supports and Restraints—Computer Designed and Drawn (79-PVP-67) (A) **S 98**

- Fenton, D. L.** Physical Characterization of Particulate Material from a Turbine Engine (79-GT-179) (A) **Jl 102**

- Ferguson, C. R.** Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Jl 101**

- Ferm, S.** Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Jl 96**

- Fernandez-Pello, A. C.** An Analysis of the Heat Transfer Mechanisms in Horizontal Flame Propagation (79-HT-25) (A) **O 93**

- Ferreira, I. W.** High Adhesion Truck for Electric Locomotives (79-RT-7) (A) **Ag 97**

## Ferries

- Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **Jl 97**

## Ferry System

- Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Ja 99**

- Fettahoglu, O. A.** Static and Dynamic Analysis of Space Frameworks with Curved Members (79-PVP-97) (A) **S 101**

- Fl, D. F.** A Generalized Short Bearing Theory (79-Lub-20) (A) **D 103**

## Fiber Cross-Sectional Circularity

- Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Tex-1) (A) **Ja 92**

## Fiber Diameter

- Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Ja 93**

## Fiber Loading

- Influence of Fiber Loading on Thermal Ablation of PTFE (79-ENAs-3) (A) **O 86**

## Fiber Microbuckling

- A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites (78-WA/Aero-1) (A) **Ap 100**

## Fiber Migration

- Fiber Migration Characteristics in Open-End Spun Cotton-Rich Blended Yarn (79-Tex-7) (A) **D 100**

## Fiber-Optic Laser-Doppler Probe

- A Fiber-Optic Laser-Doppler Probe for Vibration Analysis of

- Rotating Machines (79-GT/Isr-11) (A) **O 83**

## Fiber Optic Ribbons

- Automotive Computer (BTR) **F 57**

## Fiber Optics

- "Smart Fixture" Uses Fiber Optics to Save Energy (BTR) **Ap 55**

- Fiber Optics Link Manufacturing Processes with Computers (BTR) **D 63**

## Fiber-Reinforced Composites

- An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites (78-WA/Aero-8) (A) **Ap 101**

- Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90**

## Fiber Reinforced Metals

- Fiber Reinforced Metals in Turbine Blades (79-GT/Isr-1) (A) **O 82**

## Fiber Stress

- Stress in Glass Fibers Induced by the Draw Force (78-WA/APM-21) (A) **My 104**

## Fibers

- DOT Studies Steel-Like Fibers (BTR) **Mr 51**  
Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) (A) **Ja 92**

## Fibrous Materials

- Contact Drying of a Sheet of Moist Fibrous Material (79-Tex-2) (A) **D 99**

- The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**

## Field Applications

- Collapsible Module Extends Tenfold in Height (BTR) **F 60**

## Field Development Program

- Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Jl 104**

## Field Duty Cycle

- A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**

## Field Engineering

- Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) (A) **F 127**

## Field Measurements

- Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC/FU-3) (A) **Ja 91**

## Field Studies

- Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Ja 97**

## Field Technique

- The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Ja 90**

## Field Testing

- Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Jl 95**

- Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**

## Field Tests

- Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) (A) **My 96**

- An In-Field Method for the Determination of the Normal Plastic Anisotropy (R) Value for Sheet Materials (78-WA/Prod-41) (A) **Ja 90**

- Fields, R. A.** Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**

- Filippi, F.** Modularity and Optimization in Fluid Loop Radiator Systems (79-ENAs-37) (A) **O 90**

- Filipov, G. A.** Problems of Moisture Separation in Wet Steam Turbines (79-WA/GT-4) (A) **Ap 88**

## Fillet Radius

- Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**

- Filiod, R.** Identification of Eigensolutions by Galerkin Technique (79-DET-35) (A) **N 112**

## Film Boiling

- A Prediction of the Minimum Film Boiling Conditions for Spherical and Horizontal Flat Plate Heaters (79-HT-45) (A) **N 102**

## Film Coefficient

- Baseline Data on Film Coefficient for Heating Isobutane Inside a Tube at 4.14 MPa (600 psia) (79-HT-14) (A) **O 92**

- Experimental Study of the Inflow Effects on a Natural

- Convection Heat Sink (78-WA/HT-30) (A) **Ap 92**

## Film Condensation

- Laminar Film Condensation Over a Vertical Circular Cylinder with Effect of Electrical Field (78-WA/HT-49) (A) **Mr 96**

## Film Cooling

- An Experimental Investigation of Film Cooling on a Turbine Rotor Blade (79-GT-32) (A) **Ag 97**

- The Film Cooling Effectiveness of Double Rows of Holes (79-GT/Isr-10) (A) **O 83**

- On the Film Cooling Effectiveness Controversy (79-GT-27) (A) **Jl 90**

- Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Ja 100**

- The Flow and Film Cooling Effectiveness Following Injection Through a Row of Holes (79-GT/Isr-6) (A) **O 82**

- Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Jl 93**

## Film Dampers

- Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Jl 98**

## Film Thickness

- Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Ja 95**

- Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus II—Starved Junction (78-Lub-1) (A) **Ja 93**

- Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Ja 89**

- Lubricant Limiting Shear Stress Effect on EHD Film Thickness (79-Lub-12) (A) **D 103**

- Measuring Plastic Film Thickness (BTR) **D 58**

- Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**

- Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**

## Film Thickness Measurements

- An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**

## Film Turbulence

- Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Jl 104**

## Films

- The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Ja 89**

- Elastohydrodynamic Squeeze Films: Effects of Viscosity and Fluctuating Load (78-Lub-20) (A) **Ja 95**

## Filters

- Electrostatic Filtration (C) **Ja 40**

## Filtration

- Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Ja 88**

## Filtration Effects

- Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) (A) **Ja 96**

- Fisher, D. G.** Experience with Experimental Applications of Multivariable Computer Control (78-WA/DSC-28) (A) **Ap 96**

## Fin Performance

- Triangular Fin Performance by the Heat Balance Integral Method (78-WA/HT-50) (A) **Mr 96**

- Finch, B. N.** Traveling in the Best Circles (C) **Jl 40**

- Findley, W. N.** Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**; Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**

- Finegan, F.** A Vine Idea **Mr 44**

- Finger, S. M.** Development of Oil Content Monitors for Navy Ships (79-ENAs-42) (A) **O 90**

## Finite Cylinders

- A Model of MHD Natural-Convection Heat Transfer from a Finite Cylinder (78-WA/HT-24) (A) **Mr 95**

## Finite Difference Form

- Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**

## Finite Elasticity Solutions

- Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**



## Finite Element Analysis

- An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**
- Design Improvement of a Friction Brake Plate Through Finite Element Analysis (79-DE-18) (A) **Ag 103**
- Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**
- Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**
- Finite Element Analysis of Mindlin Plates (78-WA/DE-6) (A) **Mr 85**
- Finite Element Analysis of Rotating Pretwisted Asymmetric Cross-Section Blades (79-DET-95) (A) **D 105**
- Finite Element Analysis of Transient Natural Convection in Enclosed Spaces (79-HT-49) (A) **N 102**
- A Passive Graphics Program for General Finite Element Analyses (79-PVP-20) (A) **Ag 105**
- Finite Element Method**
- An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites (78-WA/Aero-8) (A) **Ap 101**
- An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**
- Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**
- Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**
- Axisymmetric Bending of Annular Plates (78-WA/PM-27) (A) **Je 93**
- Dynamic Reduction in Rotor Dynamics by the Finite Element Method (79-DET-70) (A) **N 116**
- A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 96**
- Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 98**
- Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Je 98**
- Spherical Bearings: Static and Dynamic Analysis Via the Finite Element Method (79-Lub-1) (A) **D 102**
- Solving Three Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) (A) **F 127**
- Subsea Chamber Design for the Dry Containment of Well-head Equipment (78-Pet-43) (A) **F 125**
- Finite-Element Models**
- A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) (A) **Mr 91**
- Finite Element Stiffness Method**
- A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**
- Finite Element Techniques**
- Stresses in Elbows Created by Supporting Lug Load (79-PVP-51) (A) **S 97**
- Finite Elements**
- Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 98**
- In-Plane Vibration of Annular Disks Using Finite Elements (79-DET-100) (A) **D 105**
- The Response of a Hart Machine to Impact Loading Using Finite Elements (79-DET-40) (A) **N 112**
- Finite Extension**
- Finite Extension of an Elastic Strand with a Central Core (78-WA/PM-7) (A) **My 103**
- Finite Journal Bearings**
- Behavior of Finite Journal Bearings Under Dynamic Loading Conditions (79-Lub-22) (A) **D 104**
- Finite Length Bearing**
- A Finite Length Bearing Correction Factor for Short Bearing Theory (79-Lub-13) (A) **D 103**
- Finite Length-Self-Acting Bearings**
- Gas-Lubricated Porous Bearings of Finite Length-Self-Acting Journal Bearings (78-Lub-30) (A) **Ja 96**
- Finite Line Element Technique**
- Computer-Aided Fatigue Design Power Transmission Shafts with Strength Constraints Using a Finite Line Element Technique and a Proposed Fatigue Failure Criterion (79-DET-103) (A) **D 106**
- Finned Heat Pipes**
- The Analysis of Heat Transfer with and without Condensation in a Heat Pipe Heat Exchanger (78-WA/HT-59) (A) **Ap 92**

## Finned Tubes

- Cooling Air in Turbulent Flow with Multi-Passage Internally Finned Tubes (78-WA/HT-52) (A) **Mr 96**
- Flo Rite, R. J.** Methane Utilization (79-GT-139) (A) **Ji 100**
- Fire Characteristics**
- Fire Characteristics Under the Influence of External Radiation (79-HT-71) (A) **N 104**
- Fire Hazards**
- Laminar Wake Flame Heights (79-HT-68) (A) **N 104**
- Fire Spread**
- The Role of Radiation in Pressure Modeling of Upward Fire Spread (79-HT-28) (A) **O 94**
- Fireside Ash Deposition**
- Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**
- Fireside Corrosion**
- Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Ji 97**
- First-Passage Failure**
- An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/PM-14) (A) **My 103**
- First Order Linear Equation**
- Graphical Solutions for the Characteristic Roots of the First Order Linear Differential—Difference Equation (78-WA/DSC-31) (A) **Ap 96**
- Fisher, E. R.** Conceptual Design of an 80,000-shp Fossil-Fired Closed-Cycle Helium Turbine Propulsion System for Naval Ship Applications (79-GT-94) (A) **Ag 99**
- Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**
- Fitzgerald, R.** Kine-Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Ja 99**
- Fitzroy, N. D.** Elections to Fellow Grade **Ja 84**
- Fixed Axes of Rotation**
- Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**
- Fixed Beds**
- Heat and Mass Transfer in Fixed Beds at Low Reynolds Numbers (79-HT-91) (A) **N 107**
- Fleck, R. D.** The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**
- Flame Behavior**
- The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**
- Flameless Combustion**
- Earth + Water + Air = Fire: The Wet Air Oxidation (WAO) of Wastes **D 30**
- Flaherty, J. A.** An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**
- Flame Heights**
- Laminar Wake Flame Heights (79-HT-68) (A) **N 104**
- Flame Propagation**
- An Analysis of the Heat Transfer Mechanisms in Horizontal Flame Propagation (79-HT-25) (A) **O 93**
- Flame Sprayed Coatings System**
- Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 89**
- Flame Stability**
- Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ji 104**
- Flanged Couplings**
- Methods for Modeling Flanged and Curvic Couplings for Dynamic Analysis of Complex Rotor Constructions (79-DET-65) (A) **N 114**
- Flank Wear**
- On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/Prod-23) (A) **My 100**
- Flare Operation**
- Proper Flare Operation Conserves Energy (78-Pet-33) **F 123**
- Flat Cars**
- Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves (78-WA/RT-13) (A) **My 93**
- Flat Diffusers**
- Performance Correlations for Flat and Conical Diffusers (79-GT-52) (A) **Ji 91**

## Flat Plate Heaters

- A Prediction of the Minimum Film Boiling Conditions for Spherical and Horizontal Flat Plate Heaters (79-HT-45) (A) **N 102**
- Flat Plate Solar Collector**
- New Solar Collector (F) **Ja 54**
- Flat Plates**
- Free Convection Boundary Layers on a Non-Isothermal Vertical Flat Plate (79-HT-112) (A) **N 108**
- Thermal Ignition Analysis in Boundary Layer Flows (78-WA/HT-47) (A) **Ap 92**
- Flat Steel Wire**
- Flat Wire—Narrow Steel with a Widening Future (BTR) **Ag 51**
- Flat Surface Grinding**
- Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**
- Flat Surfaces**
- Construction of Three-Workpiece Lapping Process (78-WA/Prod-7) (A) **Ja 90**
- Laser Anemometer Measurements in Turbulent Natural Convection over a Vertical Flat Surface (79-HT-106) (A) **N 108**
- Flow Inspection**
- Lasers for Flow Inspection of Valve Lifters (BTR) **D 83**
- Flaw Repair**
- Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**
- Fleeter, S.** The Time-Variant Aerodynamic Response of a Stator Row Including the Effects of Airfoil Camber (79-GT-110) (A) **Ag 99**
- Fleming, D. P.** Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Ji 92**
- Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Ja 95**
- Fleentie, D. L.** An Experimental Study of the Secondary Flow in a Curved Rectangular Channel (79-FE-6) (A) **O 85**
- Fletcher, L. S.** Elections to Fellow Grade **My 90**
- Flexibility Coefficients**
- Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**
- Flexible Bellows**
- Transmitting Rotary Motion at an Angle (BTR) **Ji 47**
- Flexible Cylinders**
- Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/PM-24) (A) **My 105**
- Flexible Impellers**
- Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**
- Flexible Multibody Systems**
- Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**
- Flexible Rotor Balancing**
- An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Ji 101**
- Flexible Rotors**
- Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) (A) **Mr 85**
- Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-88) (A) **N 117**
- Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Ji 92**
- Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Ji 99**
- Fleener, T. J.** Author Steamboats Come True: American Inventors in Action (CB) **N 119**
- Flight Certification Test Firings**
- Shuttle Engine Undergoes Successful Test (BTR) **N 83**
- Flight Testing**
- Engine Life Usage Experience of YF17/YJ101 Flight and Ground Testing (78-WA/GT-11) (A) **Ap 89**
- Floating Dry Cooling**
- Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Enr-2) (A) **Je 92**
- Floating Hotels**
- Floating Hotels (F) **F 84**
- Floating Tankers**
- Deepwater Production Risers (78-Pet-13) (A) **F 122**
- Floor Response Spectrum Method**
- A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**
- Floral, R. F.** Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) (A) **S 96**

## Flow

- Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments** (79-GT-111) (A) **Ji 96**
- Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings** (79-GT-87) (A) **Ji 95**
- Aerodynamics of the Heat Exchangers and Their Arrangement in Large Dry Cooling Towers** (78-WA/HT-19) (A) **Ap 91**
- Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices** (78-WA/Bio-1) (A) **Mr 91**
- An Analysis of Heat Transfer in a Turbulent Heat-Generating Flow with High Prandtl Numbers** (79-HT-114) (A) **N 106**
- Application of Hamilton's Principle to Large Deformation and Flow Problems** (79-APM-18) (A) **S 107**
- An Approach to Optimum Subsonic Inlet Design** (79-GT-51) (A) **Ji 91**
- An Approximate Method for the Determination of the Response Frequency of Pipe Whip** (79-PVP-123) (A) **S 104**
- Atomization of Water Jets and Sheets in Axial and Swirling Airflows** (79-GT-170) (A) **Ji 102**
- Axially Symmetric Radial Flow of Rigid/Linear-Hardening Materials** (79-APM-20) (A) **S 107**
- Base Pressure Associated with Incompressible Flow Past Wedges at High Reynolds Numbers** (79-APM-31) (A) **S 106**
- A Blade-to-Blade Solution of the Flow in a Centrifugal Compressor Impeller with Splitters** (79-GT/ltr-17) (A) **O 84**
- Combined Convective Heat Transfer From Vertical Cylinders in a Horizontal Flow** (78-WA/HT-45) (A) **Mr 96**
- Compressor Rotating Stall in Uniform and Non-Uniform Flow** (79-GT/ltr-18) (A) **O 84**
- Constrained Flow Past Cavitating Bluff Bodies** (78-WA/FE-11) (A) **Je 89**
- Cooling Air in Turbulent Flow with Multi-Passage Internally Finned Tubes** (78-WA/HT-52) (A) **Mr 96**
- Design Considerations for the Closed-Loop Water-Cooled Turbine** (79-GT-71) (A) **Ji 93**
- Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit** (78-WA/GT-2) (A) **Ap 88**
- Design and Test of an Extremely Wide Flow Range Compressor** (79-GT-80) (A) **Ag 98**
- Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow** (79-GT-130) (A) **Ji 98**
- Distinctions Between Two Types of Self Excited Gas Oscillations in Vaneless Radial Diffusers** (79-GT-58) (A) **Ji 92**
- Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow** (78-WA/APM-24) (A) **My 105**
- Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory** (79-APM-3) (A) **S 105**
- Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers** (78-WA/HT-18) (A) **Ap 90**
- The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade** (79-GT-13) (A) **Je 99**
- Effect of Partial Flow Blockage on Rewetting of Vertical and Horizontal Circular Ducts** (79-HT-44) (A) **O 95**
- An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade** (79-GT-99) (A) **Ji 95**
- Experimental Study of the Inflow Effects on a Natural Convection Heat Sink** (78-WA/HT-30) (A) **Ap 92**
- An Experimental Study of the Secondary Flow in a Curved Rectangular Channel** (79-FE-6) (A) **O 85**
- The Flow and Film Cooling Effectiveness Following Injection Through a Row of Holes** (79-GT/ltr-6) (A) **O 82**
- Flow Through Non-Circular Annular Passages** (79-FE-12) (A) **O 85**
- Friction and Heat Transfer in Turbulent Free Swirling Flow in Pipes** (79-HT-39) (A) **O 84**
- A General Solution for Distorted Flow in Cascades of Aerofoils** (79-GT-65) (A) **Ji 93**
- Growth of Interfacial Waves in Closed Horizontal Channels** (78-WA/FE-6) (A) **Je 89**
- Heat Transfer to Plane Turbulent Wall Jet Discussion on the Reynolds Analogy Factor** (79-HT-40) (A) **O 84**
- Heat Transfer in Thermally Developing, Absorbing, Emitting and Scattering Slug and Couette Flows Between Pa-**

- rallel Plates with Collocation Method** (79-HT-20) (A) **O 93**
- Heat Transfer in Turbulent Rectangular Flows Affected by Buoyancy Forces in Rectangular Cavities** (79-HT-77) (A) **N 105**
- Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan** (79-GT-31) (A) **Je 100**
- An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel** (78-WA/Prod-5) (A) **My 98**
- An Investigation of Regenerative Blowers and Pumps** (78-WA/PID-2) (A) **My 94**
- Investigations of Transonic Turbine Cascade with High Stagger and Low Solidity** (79-GT-25) (A) **Je 100**
- Laminar Flow of Suspensions in the Entrance Region of a Diffuser** (79-FE-8) (A) **O 84**
- Liquid Jet Impingement Normal to a Disk in Zero Gravity** (78-WA/FE-1) (A) **Je 88**
- Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses** (79-GT-129) (A) **Ji 98**
- Measured Velocity Characteristics of the Flow in the Impeller of a Centrifugal Compressor** (79-HT-32) (A) **O 94**
- Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine** (79-GT-107) (A) **Ji 96**
- Mixed Forced and Free Convection on Inclined Surfaces** (78-WA/HT-46) (A) **Ap 92**
- Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow** (78-WA/APM-25) (A) **Je 93**
- Nonparallel Effects on the Stability of Jet Flows** (78-WA/APM-16) (A) **My 104**
- Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder** (78-WA/FE-10) (A) **Je 89**
- Numerical Investigations on the Generation and Development of Rotating Stalls** (78-WA/GT-5) (A) **Ap 89**
- Numerical Simulation of Dual-Media Thermal Energy Storage Systems** (79-HT-35) (A) **O 94**
- A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice** (78-WA/FE-5) (A) **Je 89**
- On the Onset of Breakup in Inviscid and Viscous Jets** (79-APM-7) (A) **S 106**
- Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors** (79-GT-125) (A) **Ji 98**
- Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes** (79-GT-148) (A) **Ji 99**
- Performance Prediction for an Axial Hydraulic Transmission** (78-WA/OCE-5) (A) **F 130**
- Pipeline Rupture Detection and Controls** (78-Pet-54) (A) **F 126**
- Prediction of Incompressible Turbulent Separating Flow** (78-WA/FE-4) (A) **Je 89**
- The Production of Vorticity and Its Effects on the Flow in Centrifugal Compressor Impellers** (79-GT-113) (A) **Ji 96**
- Relationships for Nozzle Performance Coefficients** (79-GT-145) (A) **Ji 101**
- Reverse Plastic Flow Associated With Plastic Indentation** (78-WA/Prod-19) (A) **My 100**
- Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures** (78-WA/FE-3) (A) **Je 88**
- Stability of Flow From a Nuclear Cavity** (79-FE-5) (A) **O 85**
- Subsonic Turbulent Flow Past a Downstream Facing Annular Step** (78-WA/FE-15) (A) **Je 89**
- Symmetric Sink Flow Between Parallel Plates** (78-WA/FE-6) (A) **Je 89**
- Thermal Ignition Analysis in Boundary Layer Flows** (78-WA/HT-47) (A) **Ap 92**
- Three-Dimensional Lifting-Surface Theory for an Annular Blade Row** (79-GT-182) (A) **Ji 103**
- Total Temperature Probe Calibration in Supersonic Rarefied Flows** (78-WA/HT-1) (A) **Mr 93**
- Turbulence Modeling of Axial Flow in a Bare Rod Bundle** (79-HT-38) (A) **O 94**
- Turbulent Co-Current Gas-Liquid Flow in a Tube with and without Swirl** (79-FE-11) (A) **O 85**
- Unsteady Flow Phenomena in Multiple Disk Fans** (79-FE-10) (A) **O 85**
- Flow Analysis**
- An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations** (78-Lub-5) (A) **Je 93**
- An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine** (79-GT-53) (A) **Ji 91**
- Developments in Pressure Vessel Technology** (CB) **Ag 104**

- Improving Turbine Component Efficient** (79-GT-176) (A) **Ji 102**
- Temperature Stability in a 0.9 Cubic Meter Water Bath** (78-WA/TM-2) (A) **F 131**
- Viscous Flow Analysis of Mixed Flow Rotors** (78-WA/GT-3) (A) **Ap 88**
- Flow Channel Orientation**
- Effect of Flow Channel Orientation on Rewetting Phenomenon** (78-WA/HT-31) (A) **Mr 95**
- Flow Compressors**
- Experimental and Analytical Investigation of the Effects of Reynolds Number and Blade Surface Roughness on Multistage Axial Flow Compressors** (79-GT-2) (A) **Ag 97**
- Flow Control Properties**
- The Flow Control Properties of a Specially Designed Tee-Joint** (78-WA/DSC-5) (A) **Ap 94**
- Flow Curvatures**
- Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor** (79-GT-9) (A) **Je 99**
- Flow Development**
- The Development of Wake Flow in a Centrifugal Impeller** (79-GT-152) (A) **Ji 99**
- Flow Distortions**
- The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions** (79-GT-93) (A) **Ag 99**
- Flow Effects**
- Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages** (79-GT-55) (A) **Ji 91**
- Flow Field**
- Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation** (79-GT-5) (A) **Je 98**
- Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors** (79-GT-34) (A) **Je 100**
- Flow Leakage**
- Measured Effects of Flow Leakage on the Performance of the GT-225 Automotive Gas Turbine Engine** (79-GT-3) (A) **Ag 97**
- Flow Loss**
- The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor** (79-GT-102) (A) **Ji 96**
- Flow Measurements**
- Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques** (79-GT-40) (A) **Ji 90**
- Flow Meters**
- Acoustic Flowmeters for Pipelines** **O 28**
- An Award for Acoustic Flowmeters (ES)** **O 18**
- Copernicus Questioned (C)** **My 45**
- Coriolis/Gyroscopic Flow Meter** **Mr 36**
- Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter** (78-WA/FM-3) (A) **Mr 92**
- New Slant Needed? (C)** **My 45**
- Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters** (78-WA/FM-4) (A) **Mr 92**
- Flow Mode**
- Multimode Leak Detection System** (78-Pet-53) (A) **F 125**
- Flow Model**
- Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces** (78-Lub-17) (A) **Je 95**
- Flow Nonuniformity**
- The Effect of the Longitudinal Heat Conduction and the Flow Nonuniformity on the Thermal Performance of Cross-flow Heat Exchanger** (78-WA/HT-51) (A) **Mr 96**
- Flow Parameters**
- The Base Pressure Problem in Transonic Turbine Cascades** (79-GT-120) (A) **Ji 98**
- Flow Path**
- Problems of Moisture Separation in Wet Steam Turbines** (78-WA/GT-4) (A) **Ap 88**
- Flow Phenomena**
- Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region** (78-WA/HT-37) (A) **Mr 96**
- Flow Predictions**
- A Numerical Solution Method for the Prediction of Flow and Terminal Distribution in Shell-and-Tube Heat Exchangers** (79-HT-63) (A) **N 103**
- Wellhead Flow Predictions for Texas-Louisiana Geopressured Reservoirs** (79-HT-70) (A) **N 104**
- Flow Rate**
- Hydraulic Axial Thrust in Multistage Centrifugal Pumps**

(78-WA/FE-12) (A) **Je 89**  
 The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**  
 Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**  
 Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**  
**Flow Regime**  
 The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Je 100**  
**Flow Stress Model**  
 Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**  
**Flow Stress Values**  
 The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**  
**Flow Structure**  
 Numerical Computation of Turbulent Flow Structure in a Cyclone Chamber (79-HT-31) (A) **O 94**  
**Flow Studies**  
 Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 85**  
 A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**  
**Flow Tubes**  
 Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**  
 Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**  
**Flowers, T. L.** Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Ji 91**  
**Flowing Mixtures**  
 Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **Ji 100**  
**Flowing Oil Wells**  
 Predicting Temperatures in Flowing Oil Wells (78-Pet-9) (A) **Je 97**  
**Flow Rates**  
 Selection of Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-9) (A) **Je 97**  
**Fluctuating Load**  
 Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Je 95**  
**Fluctuating Pressure Amplitude**  
 Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**  
**Flue Gas Monitoring**  
 Applications of the Electro-Chemical Combustion Oxygen Analyzer (78-IPC-Pwr-3) (A) **Je 91**  
**Fluid Bed Combustors**  
 Coal Combustion (C) **O 42**  
 Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**  
 Environmental Assessments of Small Scale Fluid Bed Combustors (79-JPGC-Pwr-10) (A) **D 98**  
**Fluid Dynamic Analysis**  
 Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ji 98**  
**Fluid Dynamics**  
 Flow Dynamics of Volume-Heated Boiling Pools (79-HT-102) (A) **N 108**  
**Fluid Engineering**  
 Constrained Flow Past Cavitated Bluff Bodies (78-WA/FE-11) (A) **Je 89**  
 Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 89**  
 The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 89**  
 Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**  
 Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Je 89**  
 Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**  
 Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Je 89**  
 Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 88**  
 Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Je 89**

A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Je 89**  
 Prediction of Incompressible Turbulent Separating Flow (78-WA/FE-4) (A) **Je 89**  
 Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Je 88**  
 Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Je 89**  
 Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Je 89**  
**Fluid Flow**  
 Heat Transfer for Laminar, Uniform Heat Generating Fluid Flow in a Curved Pipe (79-HT-93) (A) **N 107**  
 Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**  
 Permeability Near Oil Wells (BTR) **My 50**  
**Fluid Induced Vibrations**  
 The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**  
**Fluid Layers**  
 A Numerical Investigation of Thermal Convection in a Heat-Generating Fluid Layer (79-HT-103) (A) **N 108**  
 Onset of Convection in Fluid Layers with Nonuniform Volumetric Energy Sources (79-HT-100) (A) **N 107**  
 Three-Dimensional Thermal Convection Produced by Two-Dimensional Thermal Forcing (79-HT-109) (A) **N 108**  
**Fluid Mechanics**  
 Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Cylindrical Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**  
 Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**  
**Fluid Meters**  
 Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**  
 Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) (A) **Mr 92**  
 Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters (78-WA/FM-4) (A) **Mr 92**  
 The Stolz and ASME-AGA Orifice Equations Compared to Laboratory Data (78-WA/FM-2) (A) **Mr 92**  
**Fluid Nitrogen**  
 Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region (78-WA/HT-37) (A) **Mr 98**  
**Fluid Properties**  
 Phase Change in Liquid Face Seals: Roman II-Isothermal and Adiabatic Bounds With Real Fluids (79-Lub-4) (A) **D 102**  
**Fluid Rheology**  
 The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) (A) **Je 94**  
**Fluid Saturated Rocks**  
 Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**  
**Fluid Selection**  
 Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-6) (A) **Je 93**  
**Fluid Viscosity**  
 Viscosity of Nitrogen Near the Critical Point (78-WA/HT-38) (A) **Ap 91**  
**Fluidic Fuel-Injection System**  
 An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) (A) **Ap 95**  
**Fluidic Generators**  
 Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**  
**Fluidic Partial Pressure Sensor**  
 A Fluidic Partial Pressure Sensor (78-WA/DSC-22) (A) **Ap 95**  
**Fluidized Bed**  
 Advanced Heat Exchanger Configurations for Coal-Fired Fluidized Beds (78-WA/HT-40) (A) **Ap 91**  
 An Analytical Study of Heat Transfer to a Horizontal Cylinder in a Large Particle Fluidized Bed (79-HT-78) (A) **N 105**  
 Freese Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Ji 97**  
 Heat Transfer Mechanisms Near Horizontal Heat Exchange Tubes in an Air Fluidized Bed of Uniformly Sized Glass Particles (79-HT-88) (A) **N 106**  
**High-Temperature Coal Gasification (BTR)** **Ji 51**  
 Local Heat Transfer Coefficients Around Horizontal Tubes in Fluidized Beds (79-HT-75) (A) **N 105**  
 Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Ji 99**  
 An Order for Fluidized Bed (ES) **Je 18**  
 Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**  
 Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**  
**Fluidized Bed Air Heaters**  
 Heat Transfer and Pressure Drop in Gas-Cooled Fluidized-Bed Combustors for Gas Turbine Systems—Analysis and Application to Design (79-HT-87) (A) **N 105**  
**Fluidized Bed Coal Combustor**  
 Development Progress on the Atmospheric Fluidized Bed Coal Combustor for Cogeneration Gas Turbine System for Industrial Cogeneration Plants (79-GT-104) (A) **Ap 98**  
**Fluidized Bed Combustion**  
 Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**  
 Fluidized Bed Combustion... A New Era in Ship Propulsion **Je 30**  
 Fluidized Bed Moves Along (ES) **Mr 22**  
 Riley and Babcock (ES) **Ji 20**  
**Fluidized Bed Combustors**  
 The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 108**  
 The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**  
 Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **Ji 106**  
**Fluidized Combustion**  
 An Award of Honor (ES) **S 21**  
 Building Confidence (ES) **S 21**  
**Fluidized Heat Exchangers**  
 Characteristics of a Liquid-Liquid Fluidized Heat Exchanger (79-HT-80) (A) **N 105**  
**Fluids**  
 The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) (A) **S 108**  
 Mixed Layer Growth and Heat Transfer in a Stratified Fluid Heated from Below (79-HT-107) (A) **N 108**  
 Natural Convection in Heat Generating Fluids in Cavities (79-HT-95) (A) **N 107**  
 Natural Convection of a Heat Generating Fluid in a Closed Cavity (78-WA/HT-6) (A) **Mr 93**  
**Fluids Engineering**  
 An Experimental Study of the Secondary Flow in a Curved Rectangular Channel (79-FE-6) (A) **O 84**  
 Fillet Size in a Liquid Jet (79-FE-1) (A) **O 84**  
 Flow Through Non-Circular Annular Passages (79-FE-12) (A) **O 85**  
 Fluids Engineering Award nominations **Ap 80**  
 A Fluid Mechanics Model to Estimate the Leakage of Incompressible Fluids through Labyrinth Seals (79-FE-4) (A) **O 85**  
 Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) (A) **O 84**  
 On the Motion of Rectangular Prismatic Bodies (79-FE-3) (A) **O 84**  
 Stability of Flow From a Nuclear Cavity (79-FE-5) (A) **O 85**  
 Turbulent Co-Current Gas-Liquid Flow in a Tube with and without Swirl (79-FE-11) (A) **O 85**  
 Turbulence Management in a High-Speed Boundary Layer Facility (79-FE-7) (A) **O 85**  
 Unsteady Flow Phenomena in Multiple Disk Fans (79-FE-10) (A) **O 85**  
 Velocity Exponent for Erosion and Noise Due to Cavitation (79-FE-9) (A) **O 85**  
 Vortex Motions Induced by V-Grooved Rotating Cylinders and their Effect on Mixing Performance (79-FE-2) (A) **O 84**  
**Fluorescent Lighting**  
 Energy-Saving Optics (BTR) **Mr 48**  
**Fluorides**  
 Radioisotope Generators for Remote Areas (BTR) **N 58**



## Flutter Boundaries

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part II—Stability and Flutter Boundaries (79-GT-112) (A) **J1 97**

## Flutter Prediction Methods

An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **J1 98**

## Fly Ash

On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) (A) **Je 98**

## Fly-Ash Conditioning Agents

Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) (A) **My 97**

## Flywheel Buses

Flywheel Buses (ES) **N 33**

Flynn, P. F. Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **J1 95**, Design and Test of an Extremely Wide Flow Range Compressor (79-GT-80) (A) **Ag 98**

## Flywheel Storage

Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

## Flywheel Systems

Whirling Response and Stability of Flexibly Mounted, Ring-Type Flywheel Systems (79-DET-71) (A) **N 116**

## Flywheels

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) (A) **S 195**

A Flywheel Energy Storage and Conversion System for Solar Photovoltaic Applications (79-ScI-1) (A) **Ag 92**

## Focusing System

Camera Focus via Ultrasonic Echo Ranging (BTR) **Ja 44**

Foeffler, F. J. Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MH-7) (A) **My 98**

## Foil Bearing

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) (A) **Ja 95**

Folsom, B. A. The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **J1 103**

Fontana, M. G. (author) Corrosion Engineering (CB) **O 97**

## Food Products

Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products (78-WA/HT-54) (A) **Mr 97**

## Food Sources

Controlled-Environmental Agricultural Systems as Food Sources for Large Space Habitats (79-ENAS-30) (A) **O 89**

## Food Supplements

The Versatile Algae (BTR) **N 81**

## Food System Galley

Food System Galley for Space Shuttle (79-ENAS-47) (A) **O 91**

## Food Technology

Food Technology in Space Habitats (79-ENAS-31) (A) **O 89**

Foord, C. A. An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **J1 98**

## Force Transmission

Criteria of Force Transmission for Linkages and Their Application for Synthesis (79-DET-2) (A) **N 109**

## Forced Convection

Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**

## Forced Cooling

Temperatures of EBS-11 Subassemblies in Air or Argon without Forced Cooling (79-HT-7) (A) **O 91**

## Forced and Free Convection

Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ag 92**

## Forced Vibrations

Forced Vibrations of a Single Stage Axial Compressor Rotor (79-GT-108) (A) **Ag 100**

Ford, R. A. J. An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **J1 98**

## Foreign Competition

Productivity (C) **Ap 42**

## Forged Bevel Gears

Calculation of the Geometric Factor Using the Plate Formula for Forged Bevel Gears with a Back Shoulder (79-DE-14) (A) **Ag 182**

Development of a Design Procedure for Forged Bevel Gears with a Web (79-DE-13) (A) **Ag 102**

## Forgings

Automatic Hot Forging for Parts Production (BTR) **N 68**

Die Temperatures During Production Drop Forging (78-WA/Prod-28) (A) **My 100**

Forgings Replace Castings on Larger Turbine Vanes (BTR) **Mr 51**

Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) (A) **Mr 89**

## Formability

Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) (A) **Mr 90**

## Forming Limit Criteria

Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) (A) **Mr 89**

## Forming Process

Stress in Glass Fibers Induced by the Draw Force (78-WA/APM-21) (A) **My 104**

Forster, S. First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **J1 94**

Fortescue, P. (recipient) George Westinghouse Gold Medal **Ja CR-13**

## FORTRAN Programs

Microcomputer Application in Engineering Design (78-DET-85) (A) **Ja 90**

Fortunato, E. Marine Reversing Gear Incorporating Single Reversing Hydraulic Coupling and Direct-Drive Clutch for Each Turbine (79-GT-61) (A) **Ag 98**

## Fossil Fuel Power

Cycling Operation of Fossil Fuel Power (79-JPGC-Pwr-5) (A) **D 97**

## Fossil Fuel Power Plants

Computer Design Aid (ES) **O 18**

## Fossil Systems

Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **J1 91**

Foster, N. W. The Flow and Film Cooling Effectiveness Following Injection Through a Row of Holes (79-GT-18) (A) **O 82**

Fougere, L. F. Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Ja 100**

## Fouling Potential

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**

## Fouling Potential Coal Ash

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**

## Foundation Fillet Radii

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**

## Four-Bar Linkages

The Analysis of an Elastic Four-Bar Linkage on a Vibrating Foundation Using a Variational Method (79-DET-64) (A) **N 114**

## Four-Square Method

Fatigue Life for Small Gear Boxes (79-DET-49) (A) **N 114**

Four Square Gear Box Testing (79-DET-48) (A) **N 114**

Fovargue, A. Applause Applause (C) **D 52**

Fowler, J. R. Development of Deviation Control Tool (78-Pet-58) (A) **F 126**

Fox, J. N. Influence of Core Assembly Refueling Requirements on LMFBR Core System Design (79-PVP-33) (A) **Ag 106**

Fox, R. G., Jr. An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**

Fractography of Reaction-Sintered Si<sub>3</sub>N<sub>4</sub> (79-GT-97) (A) **Ag 99**

## Fractionation Techniques

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**

## Fracture

Bursting Experiment of a High Pressure Multiwall Test Vessel (79-PVP-98) (A) **S 101**

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **My 99**

Comparative Analysis by the Displacement-Discontinuity Method of Two Energy Criteria of Fracture (79-APM-25) (A) **S 107**

Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**

Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 99**

Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) (A) **Mr 90**

Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**

A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 96**

## Fracture Behavior

Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

## Fracture Crack Propagation

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **J1 99**

## Fracture Ductility

Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**

## Fracture Mechanics

Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **J1 99**

An LEFM Analysis for the Effects of Weld Repair Induced Residual Stresses on the Fracture of the HSST ITV-6 Vessel (79-PVP-30) (A) **Ag 105**

## Fracture-Safe Explosives

Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) (A) **Ag 106**

## Fracture Simulation

Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**

## Fracture Toughness

Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**

## Fracturing

Annular Geometry—Its Effect of Kick Tolerance (78-Pet-63) (A) **F 127**

A New Proppant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**

A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**

Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**

## Frame Foundations

Dynamics of Frame Foundations Interacting With Soil (79-DET-53) (A) **N 114**

Francis, P. H. (recipient) Gustus L. Larson Memorial Award **Ja CR-12**

Franz, H. L. A Power Company's Approach to Improved Steam Turbine Availability (78-WA/Pwr-1) (A) **Mr 90**

Franz, K. Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Text-5) (A) **Ja 92**

Franz, P. M. High Adhesion Truck for Electric Locomotives (78-RT-7) (A) **Ag 97**

Frazier, C. T. Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **J1 100**

## Free Convection

Free Convection Boundary Layers on a Non-Isothermal Vertical Flat Plate (79-HT-112) (A) **N 108**

Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**

## Free Machining Steels

Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**

## Freely Rotating Vanes

Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Je 100**

## Freeze Conditioning Agent

Operational Evaluation of Freeze Conditioning Agent: Winter 1978-79 (79-IPC-Fu-3) (A) **D 102**

## Freeze Drying

Mechanism of Freeze-Drying of Porous Bodies by Conductive Heat Transfer (79-HT-86) (A) **N 106**



## Freezing

Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

Freund, C. J. Engineers' Contributions (C) **Ji 39**

## Freight Cars

Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94**

The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**

Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Cars and Equipment (78-WA/RT-14) (A) **My 93**

## Freight Car Trucks

The Alutusse Truck (78-WA/RT-15) (A) **My 93**

## Freight Trains

A New Rigid Frame Truck (79-RT-5) (A) **Ag 96**

## Freight Transport

Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**

Frene, J. Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**

## Freon Jet Pump

Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**

## Frequency Ranges

Plasma Laser Tunable Over Wide Frequency Range (BTR) **F 60**

Freund, C. J. Advancement by Judgement **F 28**; (78-WA/Mgt-2) (A) **Je 90**; Manufacturing—A New Image (C) **Ap 44**

## Friction

Analysis of Dynamically Loaded Floating-Ring Bearings for Automotive Applications (79-Lub-14) (A) **D 103**

A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) (A) **Je 93**

Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**

Establishment and Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**

Friction and Heat Transfer in Turbulent Free Swirling Flow in Pipes (79-HT-39) (A) **O 94**

A Mixed Friction Hydrostatic Face Seal Model With Phase Change (79-Lub-5) (A) **D 102**

A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**

Relation Between Wear of Cr Ni Steels and Debris Transport at High Temperature (950°C) (79-Lub-11) (A) **D 103**

Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**

## Friction Brake Plate

Design Improvement of a Friction Brake Plate Through Finite Element Analysis (79-DE-18) (A) **Ag 103**

## Friction Buffer Systems

Railroad Safety Buffers (BTR) **S 52**

## Friction Characteristics

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) (A) **Ja 95**

## Friction Damping

Friction Damping of Resonant Stresses in Gas Turbine Engine Airfoils (79-GT-109) (A) **Ag 99**

## Friction Damping Level

The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**

## Friction Properties

First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Ji 94**

## Frictional Damping

The Control of Structural Vibration by Frictional Damping in Electro Discharge Machined Joints (79-DET-79) (A) **N 116**

Friedlander, B. Estimation Theory and Its Role in Optimal Control (78-WA/DSC-2) (A) **Ap 93**

Friedman, R. High-Freezing-Point Fuels Used for Aviation Turbine Engines (79-GT-141) (A) **Ag 100**

Friedmann, P. The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) (A) **S 106**

Frier, J. E. (author) Pollution and Policy: A Case Essay on California and Federal Experience with Motor Vehicle Air Pollution, 1940-1975 (CB) **Mr 98**

Friesen, E. N. Measurement of Performance in an Engineering Environment (78-WA/Mgt-6) (A) **Je 91**

Frignac, J.-P. The Growth and Evolution of the TPE331 (79-GT-164) (A) **Ji 101**

Fritz, R. J. Elections to Fellow Grade **My 90**

Fruttschl, H. U. The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**

Fry, S. M. Laser Processing of Plastic Parts (79-DE-17) (A) **Ag 103**

Fryer, D. M. Failure Analysis of a 414-MPa (60,000-psi) Isostatic Press (79-PVP-18) (A) **Ag 105**

## Fuel Additives

Fuel Additives for Internal Combustion Engines: Recent Developments (CB) **Mr 98**

## Fuel/Air Mixtures

Week Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **Ji 100**

## Fuel Alternatives

An Alcohol Fuel Alternative **N 52**

## Fuel Analysis

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**

## Fuel Assemblies

In-Core Detection of Nuclear Fuel Assembly Vibration (79-DET-43) (A) **N 113**

## Fuel Blend Characteristics

Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 100**

## Fuel Cells

Second-Generation Fuel Cells (ES) **D 20**

## Fuel Combustion

Techniques of Solid Waste Fuel Combustion (79-IPC-Pwr-3) (A) **D 100**

## Fuel Compression

Laser Experiments Achieve High Fuel Compression (BTR) **S 58**

## Fuel Conservation

Demonstration of Fuel Conservation in High Temperature Industrial Furnaces (78-WA/Ener-8) (A) **Je 92**

Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Ji 104**

The Hybrid Car (ES) **Ji 20**

Shopping for Energy Alternatives (NR) **O 59**

## Fuel Consumption

Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 99**

Ceramic Applications in Turbine Engines (79-GT-75) (A) **Ji 94**

The Influence of Cylinder Cutoff on Fuel Consumption and Emissions of Diesel Engines (78-DGP-13) (A) **Je 87**

Mitsubishi-Man Diesel Engine (IF) **O 53**

Transportation Energy Trends (BTR) **Ji 41**

## Fuel Cycle Alternatives

Nonproliferation Alternative Systems Assessment Program (NASAP)—An overview (78-WA/NE-10) (A) **Mr 89**

## Fuel Cycles

A Comparative Assessment of the LMFBR and Advanced Converter Fuel Cycles (79-JPGC-NE-3) (A) **D 96**

## Fuel Economy

Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part 1 (79-GT-127) (A) **Ag 100**

Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives (78-DGP-15) (A) **Je 87**

## Fuel Economy Contest

204 MPG (NB) **Ag 62**

## Fuel Efficiency

Research for Better Fuel Efficiency (BTR) **D 59**

## Fuel-Efficient Cars

The "PXL"—Car of the 80s in Detroit (BTR) **Je 48**

## Fuel Element Design

Overview of Fuel Element Design **Ap 30**

## Fuel Gas

Fuel Gas from Biodigestion (BTR) **N 62**

## Fuel Injectors

The Effect of a Sample Lot of Fuel Injectors on Emissions Levels of a Small Gas Turbine (79-GT-165) (A) **Ji 101**

## Fuel Management Systems

An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) (A) **Ap 95**

## Fuel Oil

Coal Liquefaction R&D (BTR) **My 54**

## Fuel Oil Additives

Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce Emissions (78-Pet-27) (A) **Ja 99**

## Fuel Oil Properties

Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

## Fuel Oil Systems

Utilization of Coal-Oil and Coal-Oil Water Mixtures in Conventional Fuel Oil Systems (79-IPC-Fu-1) (A) **D 101**

## Fuel Optimization

Fuel Optimization (ES) **F 25**

## Fuel Parameters

Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project (78-DGP-29) (A) **Ja 89**

## Fuel Pin Design

Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**

## Fuel Pin Transient

Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**

## Fuel Pollution

Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**

## Fuel Production

Fuel from Citrus Waste (EN) **Ag 64**

## Fuel Property Effects

Fuel Property Effects on Combustor Performance (79-GT-178) (A) **Ji 102**

## Fuel Savings

Closed Loop Source Monitoring Saves Energy and Money (78-WA/APC-6) (A) **Ap 103**

Commercial Superconducting Generator (BTR) **Je 50**

In Search of Optimum Fuel Savings (78-WA/Ener-1) (A) **Je 92**

## Fuel Schedules

Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Ji 101**

## Fuel Service

Nuclear Fuel Service Center Approach to Reducing Proliferation Potential (78-WA/NE-9) (A) **Mr 88**

## Fuel Sources

Texas Takes Stock (ES) **Je 18**

## Fuel Staging

Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ji 104**

## Fuel Temperature

Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**

## Fuels

Alcohol's Promise (C) **F 55**

Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**

Another Point of View (ES) **S 20**

Application of Low-Btu Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**

Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**

Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Je 98**

Coal or Lignite Handling Functions by Least Input Power (79-IPC/Fu-2) (A) **D 101**

Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory (78-WA/Fu-1) (A) **Je 96**

The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**

Conversion of Industrial Plants to Use Coal as Fuel (78-IPC-Fu-2) (A) **Ja 91**; **Ji 26**

Converting Coal to Liquid/Gaseous Fuels **Je 34**

Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**

Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Je 97**

Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **Ji 102**

Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**

On the Dynamics of Electrostatically Precipitated Fly Ash

(78-WA/Fu-3) (A) **Je 96**  
 Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Jl 101**  
 The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Jl 91**  
 The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Jl 103**  
 Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **Jl 102**  
 Endless Fuel from Seawater (BTR) **Mr 52**  
 Energy from Coal in the Year 2000 (BTR) **S 92**  
 Evaluating Gasified Coal (ES) **O 18**  
 Evaluation of Particulate Emissions from Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**  
 The Fate of Fuel (NB) **Je 67**  
 Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**  
 Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Jl 99**  
 GUD-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Jl 98**  
 High-Freezing-Point Fuels Used for Aviation Turbine Engines (79-GT-141) (A) **Ag 100**  
 A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Jl 102**  
 Hydrogen as an Automotive Fuel (BTR) **Je 52; (C) Ag 43**  
 Industrial Application of a 66,000 lb/hr Vibrating Stoker Fired Boiler (78-IPC-Fu-4) (A) **Ja 91**  
 Name Change (IF) **O 53**  
 Oil Shale Utilization Method (IF) **O 52**  
 Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**  
 Operational Evaluation of Freeze Conditioning Agent: Winter 1978-79 (79-IPC-Fu-3) (A) **D 102**  
 Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Driveability Constraint (78-WA/DSC-25) (A) **Ap 95**  
 A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Jl 102**  
 Production of High Value Solid Fuels from Cellulosic Feed Materials by the Koppelman Process (79-Sol-33) (A) **Ag 98**  
 Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC-Fu-3) (A) **Ja 91**  
 Solar Production of Hydrogen Fuel (BTR) **Ja 45**  
 Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Je 97**  
 Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**  
 Thermal Cycle Loss Considerations for Power Plants Burning Very Low Rank Solid Fuels (79-JPGC-Pwr-4) (A) **D 97**  
 Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**  
 Utilization of Coal-Oil and Coal-Oil Water Mixtures in Conventional Fuel Oil Systems (79-IPC-Fu-1) (A) **D 101**  
 Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Ja 88**  
 Waste-Fueled Steam Boiler (IF) **D 66**  
 Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Jl 93**  
 Water in Synthetic Fuel Production: The Technology and Alternatives (CB) **Ja 100**  
 Fuglebo, M. A. A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**  
 Fujie, K. The Use of Heat Exchangers with Thermoexcel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**  
 Fujii, S. Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Je 98**  
 Fukakawa, A. Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**  
 Fukaya, K. Dynamically Optimum Design of Rope-Pulley Spacing Mechanism (79-DET-34) (A) **N 112**  
 Fuller, R. H. Energy Consumption and Conservation in

University Conservation Buildings (78-WA/PEM-4) (A) **My 95**  
**Function Generating Mechanisms**  
 Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Ja 90**  
**Function Reactor Driver**  
 World's Largest Laser (BTR) **Ja 43**  
**Functional Evaluation**  
 A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**  
 Fung, Y.-C. B. Elections to Fellow Grade **My 90**; Non-linear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**  
**Furnace Design**  
 Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Jl 100**  
 Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) (A) **My 97**  
**Furnace Pilots**  
 Those Treacherous Continuous Pilots (78-Pet-45) (A) **F 124**  
**Furnaces**  
 Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**  
 Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**  
**Fuse Formula**  
 Right Fuse Formula (BTR) **Ap 50**  
**Fusion**  
 Amazing Laser (C) **Ap 44**  
 Lithium Metal for Fusion (ES) **Jl 21**  
 Partners in Fusion (ES) **S 20**  
**Fusion Energy**  
 Fusion with ELMO (ES) **N 32**  
**Fusion Experiments**  
 New Fusion Experiments (ES) **F 25**  
**Fusion Power Development**  
 Fusion Power Development: Status and Prospects (79-JPGC-NE-1) (A) **D 96**  
**Fusion Power Reactors**  
 Another Step Toward Fusion (ES) **Ja 18**  
**Fusion Program**  
 Fusion Program (EN) **My 70**  
**Fusion Reactor**  
 Fusion Center (ES) **My 21**  
**Fusion Research**  
 Cryogenic Plant for Fusion Research (IF) **Jl 55**  
 Texans Back Fusion (ES) **O 19**

## G

Gabor, J. D. Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**  
 Gabrielson, J. E. Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) **My 96**  
 Gaggioli, R. A. Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) (A) **Je 93**  
 Galeer, J. A. The LRC Coach Trucks and Suspension (79-RT-4) (A) **Ag 96**  
 Gal-Or, B. Plasma-Spray Coating Processes: Physico-Mathematical Characterization (79-GT/ier-8) (A) **O 83**  
**Galerkin Techniques**  
 Identification of Eigensolutions by Galerkin Technique (79-DET-35) (A) **N 112**  
 Gallagher, J. P. Design of a Crack Growth Based Structural Maintenance System (79-PVP-95) (A) **S 101**  
 Galletty, G. D. Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**  
 Gallus, H.E. Blade-Flow Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Jl 98**  
 Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Jl 91**  
 Galmish, G. M. Why Go Metric? (C) **My 44**  
**Game Theory Approach**  
 Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Ja 90**

Ganic, E. N. Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**  
**Gap Seal**  
 Metallic Thermal Seal (BTR) **Jl 45**  
 Garcia-Gardea, E. Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**  
 Gardner, B. E. The CH-46 Rotor Blade Transition from Metal to Composite Materials (78-WA/Aero-9) (A) **Ap 101**  
 Gardner, E. Measurement of the Thermal Insulation Properties of Fabrics (79-Tex-3) (A) **D 99**  
 Garg, D. P. The National Energy Plan and Solar Energy Technology (78-TS-2) (A) **F 129**; The Solar Alternative and the National Energy Plan **N 42**  
 Garg, V. K. Nonparallel Effects on the Stability of Jet Flows (78-WA/APM-16) (A) **My 104**; The Train Operations Simulator (TOS)—A Tool for Railroad Accident Investigation (78-WA/RT-3) (A) **My 92**  
 Garl, H. H. Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**  
 Garrett, M. F. Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94**  
**Gas Centrifuge Machines**  
 Gas Centrifuge Machines (ES) **D 21**  
**Gas Cleanup Systems**  
 Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Jl 104**  
**Gas Compressor Stations**  
 Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **Jl 105**  
**Gas Compressors**  
 Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **Jl 95**  
**Gas Contaminated Steam**  
 A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Ener-3) (A) **Je 92**  
**Gas Cooled Combustors**  
 Heat Transfer and Pressure Drop in Gas-Cooled Fluidized-Bed Combustors for Gas Turbine Systems-Analysis and Application to Design (79-HT-87) (A) **N 106**  
**Gas Cycles**  
 Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Jl 95**  
 Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Jl 97**  
**Gas Flow**  
 An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**  
**Gas Flow Rate**  
 Selection of Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-8) (A) **Ja 97**  
**Gas Gathering Compressors**  
 Considerations for the Purchase of Gas Gathering Compressors (78-Pet-20) (A) **Ja 98**  
**Gas Generators**  
 The Development of the Olympus "C" Gas Generator (79-GT-122) (A) **Jl 97**  
**Gas Heat Transfer**  
 The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**  
**Gas Industry**  
 The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**  
**Gas-Liquid Critical Point**  
 "scosity of Nitrogen Near the Critical Point (78-WA/HT-38) (A) **Ap 91**  
**Gas-Lubricated Porous Bearings**  
 Gas-Lubricated Porous Bearings of Finite Length-Self-Acting Journal Bearings (78-Lub-30) (A) **Ja 96**  
**Gas Management System**  
 Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Jl 100**  
**Gas Oscillations**  
 Distinctions Between Two Types of Self Excited Gas Oscillations in Vaneless Radial Diffusers (79-GT-58) (A) **Jl 92**

### Gas Path Seals

Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Ja 95**

### Gas Performance

Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance (78-Pet-28) (A) **F 122**

### Gas Phase Particulate

Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT-112) (A) **O 83**

### Gas Pipelines

Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**

Electronic Line Break Controls for Gas Pipelines (78-Pet-52) (A) **F 125**

### Gas Plants

EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-18) (A) **Ja 98**

### Gas Pockets

'The Earth Burps Methane...' (BTR) **Ji 41**

### Gas Pressure Pulse

Kine Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Ja 99**

### Gas Service

New Cast Steel Alloys Readied for Arctic Gas Service (BTR) **S 60**

### Gas Storage Vessels

High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**

### Gas Streams

Gas Stream Composition and Temperature Determination in a Coal-Fired MHD Simulation Facility (78-WA/HT-23) (A) **Mr 94**

### Gas Transmission Pipelines

Basis of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**

### Gas Turbine Blades

Fundamental Mechanisms That Influence the Estimate of Heat Transfer to Gas Turbine Blades (79-HT-43) (A) **N 102**

Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**

### Gas Turbine Bus

Gas Turbine Bus Demonstration (ES) **F 24**

### Gas Turbine Combustors

Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Ji 104**

Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**

Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Ji 104**

### Gas Turbine Conference

Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Ji 104**

Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Je 98**

Acoustic Control of the Exit Plane Thermodynamic State of a Combustor (79-GT-180) (A) **Ag 100**

A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **Ji 105**

The Advanced Low-Emissions Catalytic-Combustor Programs: Phase I—Description and Status (79-GT-192) (A) **Ji 103**

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Ji 96**, Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Ji 97**

Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**

Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**

Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **Ji 105**

An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **Ji 98**

Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part I (79-GT-127) (A) **Ag 100**

Application of Abrasive Coatings to Clearance Control in the Gas Turbine (79-GT-48) (A) **Ag 98**

Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 99**

Application of All-Ceramic Nozzle to Radial Flow Turbine (79-GT-96) (A) **Ag 98**

Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Ji 91**

Application of Gas Turbine/Compressors in LNG Plants (79-GT-85) (A) **Ji 95**

Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Ji 90**

The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**

Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Ji 101**

Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Ji 95**

An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Ji 91**

An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Ji 91**

Augmented Vectored Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Je 99**

Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**

Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 98**

Atomization of Water Jets and Sheets in Axial and Swirling Airflows (79-GT-170) (A) **Ji 102**

The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Ji 98**

Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Ji 91**

Blade-Row Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Ji 96**

Catalytic Combustion for Gas Turbine Applications (79-GT-188) (A) **Ag 100**

Ceramic Applications in Turbine Engines (79-GT-75) (A) **Ji 94**

Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji 93**

Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Ji 104**

Closed Cycle Gas Turbines, An ECAS Update: Part 1 (79-GT-204) (A) **Ag 100**

The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**

Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Ji 101**

The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**; Part II—The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**

The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**

A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-62) (A) **Ji 92**

Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Je 99**

Conceptual Design of an 80,000-shp Fossil-Fired Closed-Cycle Helium Turbine Propulsion System for Naval Ship Applications (79-GT-94) (A) **Ag 99**

Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Ji 100**

Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**

Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Ji 104**

Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**

DD-963 Class Waste Heat Recovery System Experience (79-GT-159) (A) **Ag 100**

Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 100**

Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Ji 94**

Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **Ji 95**

Design of Pressurized Fluid-Bed Combustor/Particle Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**

Design and Test of an Extremely Wide Flow Range Compressor (79-GT-80) (A) **Ag 98**

Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Je 99**

Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Ji 93**

A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Ji 103**

Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Ji 104**

Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-28) (A) **Ji 90**

Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ji 98**

Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**

Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **Ji 102**

The Development of the Olympus "C" Gas Generator (79-GT-122) (A) **Ji 97**

Development Progress on the Atmospheric Fluidized Bed Coal Combustor for Cogeneration Gas Turbine System for Industrial Cogeneration Plants (79-GT-104) (A) **Ag 99**

The Development of Wake Flow in a Centrifugal Impeller (79-GT-152) (A) **Ji 99**

Distinctions Between Two Types of Self Excited Gas Oscillations in Vaned Radial Diffusers (79-GT-58) (A) **Ji 92**

A Double Acting Variable Geometry Combustor (79-GT-197) (A) **Ji 104**

Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**

The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Je 100**

The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Ji 91**

The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Je 99**

Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Ji 99**

The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Ji 103**

Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.77-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Ji 91**

The Effect of a Sample Lot of Fuel Injectors on Emissions Levels of a Small Gas Turbine (79-GT-165) (A) **Ji 101**

The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions (79-GT-93) (A) **Ag 99**

Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Ji 100**

Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **Ji 102**

An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Ji 94**

Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Ji 91**

Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Ji 99**

Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Ji 103**

Evaluation of Laminated Porous Wall Materials for Combustor Liner Cooling (79-GT-100) (A) **Ag 99**

Experimental and Analytical Investigation of the Effects of



- Reynolds Number and Blade Surface Roughness on Multistage Axial Flow Compressors (79-GT-2) (A) **Ag 97**
- The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**
- An Experimental Investigation of Film Cooling on a Turbine Rotor Blade (79-GT-32) (A) **Ag 97**
- An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**
- An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**
- Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 99**
- Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ag 100**
- Fatigue Strength of Silicon Nitride for High-Speed Rolling Bearings (79-GT-83) (A) **Ji 95**
- Feasibility of an Isolated Reverse Turbine Concept for Marine Propulsion (79-GT-63) (A) **Ji 93**
- Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Ji 95**
- Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100**
- Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Ji 97**
- First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Ji 94**
- Forced Vibrations of a Single Stage Axial Compressor Rotor (79-GT-108) (A) **Ag 100**
- Fractography of Reaction-Sintered  $\text{Si}_3\text{N}_4$  (79-GT-97) (A) **Ag 99**
- Friction Damping of Resonant Stresses in Gas Turbine Engine Airfoils (79-GT-109) (A) **Ag 99**
- Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Ji 99**
- Fuel Property Effects on Combustor Performance (79-GT-178) (A) **Ji 102**
- Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Ji 91**
- Gas Turbine Bucket Corrosion Protection Developments (79-GT-47) (A) **Ag 99**
- Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **Ji 90; Ag 97**
- A General Solution for Distorted Flow in Cascades of Aerofoils (79-GT-65) (A) **Ji 93**
- The Growth and Evolution of the TPE331 (79-GT-164) (A) **Ji 101**
- GUO-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Ji 99**
- Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Ji 101**
- Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-198) (A) **Ji 104**
- High-Freezing-Point Fuels Used for Aviation Turbine Engines (79-GT-141) (A) **Ag 100**
- A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Ji 102**
- Improving Turbine Component Efficiency (79-GT-176) (A) **Ji 102**
- Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Ji 91**
- Improvement in Recuperative Gas Cycles by Means of a Heat Generator Parity By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Ji 97**
- Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **Ji 100**
- Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Ji 96**
- The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Ji 96**
- Influence of Freely Rotating Inlet Guide Vanes on the Return Flow and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Je 100**
- Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **Ji 97**
- Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Ji 93**
- An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Ji 101**
- Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Ji 93**
- Investigation of Process and System Design Variables for Catalytic Combustion of Low-Btu Gas (79-GT-66) (A) **Ag 98**
- Investigations of Transonic Turbine Cascade with High Stagger and Low Solidity (79-GT-25) (A) **Je 100**
- Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Ji 94**
- Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Ji 100**
- Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Ji 92**
- Laser-Particle Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Ji 102**
- A Low-Cost, On-Site Performance Monitoring System (79-GT-21) (A) **Je 99**
- Low Frequency Gas Turbine Noise (79-GT-196) (A) **Ji 104**
- Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ji 98**
- Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ji 97**
- Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Ji 90**
- Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**
- Marine Reversing Gear Incorporating Single Reversing Hydraulic Coupling and Direct-Drive Clutch for Each Turbine (79-GT-61) (A) **Ag 98**
- Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**
- Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Ji 104**
- Measured Effects of Flow Leakage on the Performance of the GT-225 Automotive Gas Turbine Engine (79-GT-3) (A) **Ag 97**
- Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Ji 96**
- Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Ji 90; Ag 98**
- Mechanical Reliability Considerations in the Modern High Temperature Industrial Gas Turbine (79-GT-101) (A) **Ag 99**
- Methane Utilization (79-GT-139) (A) **Ji 100**
- Modal Analysis of Gas Turbine Buckets Using a Digital Test System (79-GT-124) (A) **Ag 100**
- A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ji 94**
- $\text{NO}_x$  Removal Process by Injection of  $\text{NH}_3$  and  $\text{H}_2\text{O}_2$  in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**
- Nonsynchronous Vibrations Observed in a Supercritical Power Transmission Shaft (79-GT-146) (A) **Ag 100**
- Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Ji 98**
- An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (78-GT-6) (A) **Je 98**
- Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ji 98**
- On the Film Cooling Effectiveness Controversy (79-GT-27) (A) **Ji 90**
- On the Optimal Tube Spacing For Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**
- Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ji 104**
- Operation of GT-225 Diffusion-Flame Combustor on Alternative Fuels Performance, Durability and Emissions (79-GT-138) (A) **Ji 92**
- The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**
- Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ji 98**
- Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Ji 99**
- A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Ji 102**
- Performance Correlations for Flat and Conical Diffusers (79-GT-52) (A) **Ji 91**
- Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ji 98**
- Physical Characterization of Particulate Material from a Turbine Engine (79-GT-179) (A) **Ji 102**
- Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**
- Power Station Experience with Retrofitted Programmable Fuel Management and Sequencing Controllers for Aero-Derivative Gas Turbine (79-GT-191) (A) **Ag 100**
- Practical "On-Engine" Microprocessor Control and Monitoring Systems for Gas Turbines (79-GT-181) (A) **Ji 103**
- The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ji 103**
- Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**
- Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**
- The Production of Vorticity and Its Effects on the Flow in Centrifugal Compressor Impellers (79-GT-113) (A) **Ji 96**
- Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Ji 101**
- Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Ji 95**
- Relationships for Nozzle Performance Coefficients (79-GT-145) (A) **Ji 101**
- The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**
- Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **Ji 100**
- Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Je 100**
- A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Ji 99**
- The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ji 98**
- The "Second Generation" LM2500—An Example of High Level of Reliability/Availability with Low Life-Cycle Costs (79-GT-79) (A) **Ag 98**
- Shock Boundary Layer Interaction on High Turning Transonic Turbine Cascades (79-GT-37) (A) **Ag 98**
- A Simple Solar Gas Turbine Plant (79-GT-90) (A) **Ji 95**
- Soot and the Combined Cycle Boiler (79-GT-67) (A) **Ji 93**
- Starting Torque Characteristics of Small Aircraft Gas Turbines and APU's (79-GT-95) (A) **Ji 96**
- Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Ji 100**
- Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Ji 97**
- Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Ji 92**
- Study of Mean and Turbulent-Velocity Fields in a Large-Scale Turbine-Vane Passage (79-GT-33) (A) **Je 100**
- Study of Metals Erosion in High Temperature Coal Gas Streams (79-GT-88) (A) **Ag 98**
- Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**
- Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Ji 99**
- A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 98**
- System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**
- Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Ji 101**
- Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**
- Three-Dimensional Lifting-Surface Theory for an Annular Blade Row (79-GT-182) (A) **Ji 103**
- The Time-Variant Aerodynamic Response of a Stator Row Including the Effects of Airfoil Camber (79-GT-110) (A) **Ag 99**
- Transition Procedure of Instationary Boundary Layers (79-GT-128) (A) **Ji 98**
- Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Ji 91**
- Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Com-



- pressors (79-GT-34) (A) **Je 100**  
 Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Ji 102**  
 Utilization of the Cold by LNG Vaporization with Closed-Cycle Gas Turbine (79-GT-84) (A) **Ag 96**  
 Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-18) (A) **Je 99**  
 Water-Cooled Gas Turbine Development Program Wheelbox Tests (79-GT-76) (A) **Ag 98**  
 Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Ji 93**  
 Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **Ji 100**  
 Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **Ji 103**
- Gas Turbine Design Changes**  
 Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-198) (A) **Ji 104**
- Gas Turbine Disks**  
 An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Ji 99**
- Gas Turbine Driven Compressor**  
 A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 98**
- Gas Turbine Engine**  
 Aircraft Gas Turbine Engine Technology (CB) **Je 104**  
 The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**  
 DD-963 Class Waste Heat Recovery System Experience (79-GT-159) (A) **Ag 100**  
 Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) (A) **Ap 89**  
 A Double Acting Variable Geometry Combustor (79-GT-197) (A) **Ji 104**  
 Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**  
 Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 90**
- Gas Turbine Engine Disks**  
 A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**
- Gas Turbine Exhaust**  
 Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Ji 101**
- Gas Turbine Flames**  
 Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Ji 101**
- Gas Turbine Inlet**  
 Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Ji 100**
- Gas Turbine Noise**  
 Low Frequency Gas Turbine Noise (79-GT-196) (A) **Ji 104**
- Gas-Turbine Plant**  
 Air-Storage Gas-Turbine Plant (IF) **S 84**
- Gas Turbine Power**  
 Leaving the Driving to Us (ES) **D 20**
- Gas Turbine Recuperators**  
 On the Optimal Tube Spacing For Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**
- Gas Turbine Regenerators**  
 Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Ji 104**
- Gas Turbine Systems**  
 The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**
- Gas Turbine Transients**  
 Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Ji 101**
- Gas Turbines**  
 A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **Ji 105**  
 An Analysis of Three-Dimensional Flow in a Centrifugal Compressor Impeller (79-GT-143) (A) **O 83**  
 Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 99**  
 Application of Gas Turbine/Compressors in LNG Plants (79-GT-85) (A) **Ji 95**  
 Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Ji 101**  
 Application of Viscous Analysis to the Design of Jet Exhaust Powered Lift Installations (79-GT-15) (A) **O 84**  
 The Behavior of a Closed-Cycle Gas Turbine with Time Dependent Operating Conditions (79-GT-182) (A) **O 83**  
 Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Ji 91**  
 A Blade-to-Blade Solution of the Flow in a Centrifugal Compressor Impeller with Splitters (79-GT-187) (A) **O 84**  
 Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications (78-WA/GT-16) (A) **Ap 90**  
 Ceramic Applications in Turbine Engines (79-GT-75) (A) **Ji 94**  
 The Classroom Design of a COGAS Plant by Naval Systems Engineering Students (79-GT-187) (A) **O 83**  
 The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**  
 Coal-Fired Gas Turbine (ES) **Mr 22; Mr 56**  
 Combined-Cycle Power Plants (ES) **Je 18**  
 The Combined Reheat Gas Turbine/Steam Turbine Cycle Part II—The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**  
 A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-62) (A) **Ji 92**  
 Compressor Response to Spatially Repetitive and Non-Repetitive Transients (79-GT-184) (A) **O 83**  
 Compressor Rotating Stall in Uniform and Non-Uniform Flow (79-GT-18) (A) **O 84**  
 Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Ji 100**  
 Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**  
 Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT-12) (A) **O 83**  
 Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**  
 A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**  
 Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 100**  
 Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Ji 94**  
 Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit (78-WA/GT-2) (A) **Ap 88**  
 Design of Air-Cooled Jet Engine Testing Facilities (79-GT-185) (A) **O 82**  
 Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**  
 Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Ji 93**  
 Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-28) (A) **Ji 90**  
 Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**  
 Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **Ji 102**  
 Development of Liquid Fuel System for Extended Operation of Industrial Gas Turbines (78-Pet-4) (A) **Je 97**  
 Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 89**  
 Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) (A) **Ap 89**  
 Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**  
 The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Ji 103**  
 The Effect of a Sample Lot of Fuel Injectors on Emissions Levels of a Small Gas Turbine (79-GT-165) (A) **Ji 101**  
 An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Ji 94**
- Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Ji 91**  
 Engine Life Usage Experience of YF17/YJ101 Flight and Ground Testing (78-WA/GT-11) (A) **Ap 89**  
 Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Ji 103**  
 A Fibre-Optic Laser-Doppler Probe for Vibration Analysis of Rotating Machines (79-GT-181) (A) **O 83**  
 Fiber Reinforced Metals in Turbine Blades (79-GT-181) (A) **O 82**  
 Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Ji 95**  
 The Film Cooling Effectiveness of Double Rows of Holes (79-GT-180) (A) **O 83**  
 The Flow and Film Cooling Effectiveness Following Injection Through a Row of Holes (79-GT-186) (A) **O 82**  
 Gas Turbines, Solar Systems—Opportunities for Clean Energy **My 78**  
 Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **Ji 90**  
 GUD-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Ji 98**  
 A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Ji 102**  
 Hopes for the Auto Turbine (ES) **O 18**  
 Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Ji 91**  
 Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **Ji 100**  
 Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Ji 98**  
 Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) (A) **Ap 89**  
 Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Ji 93**  
 Laser-Particulate Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Ji 102**  
 A Low-Cost, On-Site Performance Monitoring System (79-GT-21) (A) **Je 99**  
 Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ji 97**  
 Matching of Turbocomponents Described by the Example of Impeller and Diffuser in a Centrifugal Compressor (79-GT-189) (A) **O 82**  
 Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Ji 96**  
 Mobile Gas Turbine Power (IF) **O 53**  
 A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ji 94**  
 New International Gas Turbine Center **Ag 88**  
 NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**  
 Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-110) (A) **Ji 98**  
 Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) (A) **Ap 89**  
 A Numerical Model for Stirling Cycle Machines (79-GT-186) (A) **O 84**  
 Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ji 98**  
 Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ji 104**  
 A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Ji 102**  
 Plasma-Spray Coating Processes: Physico-Mathematical Characterization (79-GT-188) (A) **O 83**  
 Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**  
 Practical "On-Engine" Microprocessor Control and Monitoring Systems for Gas Turbines (79-GT-181) (A) **Ji 103**  
 Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) (A) **Ap 89**  
 Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**  
 Problems of Moisture Separation in Wet Steam Turbines (78-WA/GT-4) (A) **Ap 88**  
 A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**  
 Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application

(78-WA/GT-8) (A) **Ap 88**  
 Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 98**  
 Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Ji 95**  
 The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**  
 Reliability Prediction Techniques for Second Generation Marine and Industrial Gas Turbines (79-GT/ISR-3) (A) **O 82**  
 A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Ji 99**  
 The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ji 96**  
 Screening Properties of Silicon-Based Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**  
 Starting Torque Characteristics of Small Aircraft Gas Turbines and APUs (79-GT-95) (A) **Ji 96**  
 Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Ji 97**  
 Study of Mean- and Turbulent-Velocity Fields in a Large-Scale Turbine-Vane Passage (79-GT-33) (A) **Je 100**  
 Super-Efficient Water-Cooled Gas Turbine (BTR) **Ja 50**  
 Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 96**  
 Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**  
 System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**  
 Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 88**  
 Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Ji 102**  
 Viscous Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**  
 Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Ji 93**  
**Gas Turbines**  
 Closed-Cycle Gas Turbine (ES) **O 21**  
 The Modeling of NO Generation from Coal-Derived Liquids in Combustion Turbines (79-JPGC-GT-4) (A) **O 98**  
 New Variable Vane Two-Shaft Gas Turbine (BTR) **O 58**  
 Parameter Monitoring for Corrosion Control in Gas Turbines (79-JPGC-GT-1) (A) **O 98**  
 Steam-Cooled Blading a Combined Reheat Gas Turbine Reheat Steam Turbine Cycle: Part 1—Performance Evaluation (79-JPGC-GT-2) (A) **O 99**; Part 2—Design Considerations (79-JPGC-GT-3) (A) **O 99**  
**Gas Velocity**  
 Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Je 89**  
**Gas Wells**  
 The Effects of H<sub>2</sub>S on Engineering Design of Oil and Gas Wells and Facilities (78-Pet-5) (A) **Ja 97**  
 The Ultimate Control Problem—A Wild Oil or Gas Well **Je 20**  
**Gaseous Alkali Metal Compounds**  
 Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **Ji 106**  
**Gaseous Fuels**  
 Converting Coal to Liquid/Gaseous Fuels **Je 34**  
 The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**  
**Gases**  
 Application of Low-Btu Producer Gas to Industrial Steam Generation (78-IPC-Par-2) (A) **Ja 91**  
 Fatigue Crack Growth in 2 1/4Cr-1Mo Steel exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**  
 A Fluidic Partial Pressure Sensor (78-WA/DSC-22) (A) **Ap 95**  
 Gas From Prudhoe Bay (NB) **Je 67**  
 On the Sizing of Pressure Relief Valves for Pressure Vessels which are Used in the Transport of Liquefied Gases (78-WA/HT-39) (A) **Mr 96**  
 A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**  
 Producing Metallic Xenon (BTR) **Ja 45**  
 Temperature Profiles in Combustion Gases by Inversion: Review and Approach (79-HT-21) (A) **O 93**  
**Gasification**  
 High-Temperature Coal Gasification (BTR) **Ji 51**

Solid Backing for Gasification (ES) **Ja 19**  
 Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Ji 92**  
**Gasification Process**  
 Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Ja 98**  
**Gasified Coal**  
 Evaluating Gasified Coal (ES) **O 18**  
**Gasifiers**  
 Hands Across the Seal (ES) **Mr 22**  
**Gasohol**  
 An Alcohol Fuel Alternative **N 52**  
**Gasoline**  
 Noncatalytic Conversion of Biomass to Gasoline (79-Sci-29) (A) **Ag 96**  
**Gaugler, R. E.** Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**  
**Gaul, L.** Dynamics of Frame Foundations Interacting With Soil (79-DET-53) (A) **N 114**  
**Gay, C. F.** The Impact of Screen Printing on the Cost of Solar Cell Metallization (79-Sci-6) (A) **Ag 93**  
**Gay, D.** A Technical Theory of Dynamical Torsion for Beams of any Cross-Section Shapes (79-DET-59) (A) **N 114**  
**Gear Analysis**  
 Developments in Gear Analysis and Test Techniques for Helicopter Drive Systems (79-DE-15) (A) **Ag 102**  
**Gear Box Testing**  
 Four Square Gear Box Testing (79-DET-48) (A) **N 114**  
**Gear Boxes**  
 Fatigue Life for Small Gear Boxes (79-DET-49) (A) **N 114**  
 A New Speed Reducer Design Technique **S 32**  
 Optimum Oil Level for Small Gear Boxes (79-DET-50) (A) **N 113**  
**Gear Hobbing**  
 Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**  
**Gear Parameter**  
 Optimization of Aircraft Undercarriages (79-DET-89) (A) **D 104**  
**Gear Power Transmissions**  
 Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (79-DET-89) (A) **Ja 90**  
**Gear Replacement**  
 New Traction Drive Could Replace Gears (BTR) **N 66**  
**Gear Teeth**  
 Dynamics Stress Analysis of a Spur Gear Tooth (79-DET-38) (A) **N 112**  
**Gear Trains**  
 Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) (A) **Mr 85**  
**Gear Transmission**  
 Computer-Designed Gearing **Je 32**  
**Gears**  
 Elastic Deformation of Ball Bearings, Gears, and Cams (BTR) **Ji 42**  
 Planet Indexing in Planetary Gears for Minimum Vibration (79-DET-73) (A) **N 116**  
**Geary, B. J.** Codes, Accolades, Corrections (C) **Ap 45**  
**Gecim, B.** Lubricant Limiting Shear Stress Effect on EHD Film Thickness (79-Lub-12) (A) **D 103**  
**Geihart, B.** (recipient) Freeman Scholar Award **Ja CR-13**  
**Generating Facilities**  
 New Hydroelectric Project (IF) **Ap 60**  
 Think Small! (ES) **My 20**  
**Generating Plants**  
 Electric Load Management (ES) **O 18**  
**Generating Stations**  
 A Comeback for Hydroelectric (ES) **S 21**  
 Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**  
**Generating Systems**  
 Home Electrical Generating System (EN) **My 67**  
 MHD Subsystem (ES) **O 19**  
**Generation Processes**  
 Needed: New Oil Shale Processes (ES) **S 20**  
**Generation System**  
 MHD Generator Runs 500 Hours (NB) **Ji 65**  
**Generators**  
 Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Ji 95**  
 The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**; Part II—The LM 5000 Gas Generator Applied to the

Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**  
 Commercial Superconducting Generator (BTR) **Je 50**  
 Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**  
 Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Ji 91**  
 Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Ji 97**  
 Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**  
 The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**  
 Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (78-WA/DE-2) (A) **Mr 84**  
 Solar Electric Generator (IF) **Je 58**  
 Superconducting Generator (ES) **Je 19**  
 Thermoelectric Generators for Solar Energy Conversions (78-Pet-75) (A) **F 127**  
**Genot, J.** Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Ji 93**  
**Geodesic Geometry**  
 The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**  
**Geodynamics Experimental Ocean Satellite**  
 Earth Terrain Contouring by Satellite (BTR) **Mr 52**  
**Geological Applications**  
 Open Loop Thermosphons with Geological Applications (79-HT-64) (A) **N 104**  
**Geological Formations**  
 Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**  
**Geomechanical Basis**  
 Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**  
**Geometric Factors**  
 Calculation of the Geometric Factor Using the Plate Formula for Forged Bevel Gears with a Back Shoulder (79-DE-14) (A) **Ag 102**  
**Geometric Programming**  
 Optimal Design of Helical Springs for Minimum Weight by Geometric Programming (78-WA/DE-1) (A) **Mr 84**  
 A Primal-Dual Solution Procedure for Geometric Programming (79-DET-78) (A) **N 116**  
**Geometrics**  
 Spectral Methods for Transient Heat Conduction Problems in Simple Geometries (79-HT-61) (A) **N 104**  
**Geopressure-Geothermal Well**  
 Geopressure-Geothermal Well (ES) **Ja 19**  
**Geopressed Reservoirs**  
 Wellhead Flow Predictions for Texas-Louisiana Geopressed Reservoirs (79-HT-70) (A) **N 104**  
**Geopressed Water/Gas**  
 Geopressed Water/Gas as Potential Energy Source (BTR) **Ap 48**  
**George, A. H.** An Analytical Study of Heat Transfer to a Horizontal Cylinder in a Large Particle Fluidized Bed (79-HT-78) (A) **N 105**  
**George, W. K.** Eddy Viscosity Calculations of Turbulent Buoyant Plumes (79-HT-51) (A) **N 103**  
**George, W. K., Jr.** Momentum and Temperature Balance Measurements in an Axisymmetric Turbulent Plume (79-HT-42) (A) **O 94**  
**Georgiou, D. P.** Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 99**  
**Geotechnical Issues**  
 Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) (A) **F 127**  
**Geothermal Applications**  
 Hydraulically Actuated Treating Packers for Dry Rock Geothermal Applications (79-PVP-23) (A) **Ag 105**  
**Geothermal Conditions**  
 Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**  
**Geothermal Energy**  
 Geothermal Energy (EN) **Ji 68**  
 Geothermal Energy: Its Past, Present and Future Contribu-

- tions to the Energy Needs of Man (CB) **Ji 106**
- Geothermal Energy in the Western United States: Innovation Versus Monopoly (CB) **F 134**
- Geothermal Energy Development**
- The Federal Hot Dry Rock Geothermal Energy Development Program: An Overview (79-PVP-36) (A) **Ag 105**
- Geothermal Energy Systems**
- The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**
- Geothermal Heat**
- Geothermal Comes East (ES) **My 20**
- Geothermal Power**
- Geothermal Power and Water Production Studies at the University of California (78-WA/Enr-7) (A) **Je 93**
- Geothermal Power Plant**
- Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Geothermal Power Plant (78-WA/Enr-2) (A) **Je 92**
- Geothermal Reservoirs**
- Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**
- Geothermal Resources**
- Snake River Exploration (ES) **My 21**
- Geothermal Standards**
- Geothermal Standards (ES) **Mr 22**
- Geothermal Steam Pressure**
- A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Enr-3) (A) **Je 92**
- Geothermal Stimulation**
- Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**
- Geothermal Wells**
- Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**
- Gerdeen, J. C.** Creep Buckling of Spherical Shells Using a Comparative Stress Method (79-PVP-3) (A) **Ag 103**
- Gerhart, P. M.** An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**
- Ghista, D. N.** Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**; Clinical Implications of Pressure-Deformation Analysis of the Aortic Arch with Local Variations in the Elastic Property (79-Bio-5) (A) **S 109**; In Vivo Constitutive Properties of the Passive Left Ventricular Myocardium (79-Bio-6) (A) **S 109**
- Ghosh, A.** Fabrication and Installation of Production Platforms in Shallow Open Sea Areas: A New Concept (78-Pet-70) (A) **F 127**
- Giant Kelp**
- Experimental Cultivation of Giant Kelp in Oceanic Environments (79-Sol-30) (A) **Ag 95**
- Gibbs, R.** Water-Cooled Gas Turbine Development Program Wheelbox Tests (79-GT-76) (A) **Ag 98**
- Gibson, G.** Service Determines Image (C) **F 54**; Units for Engineering (C) **Je 45**; Units for the Public (C) **N 54**
- Gibson, R. D.** Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**
- Gibson, S. C.** Ozone-UV Treatment for Oily Wastewater Cleanup (79-ENAs-39) (A) **O 90**
- Gibson, W. O.** Hawaiian Sugarcane Energy Plantations (79-Sol-31) (A) **Ag 96**
- Giger, W., Jr.** Seeing the World the Way It Is (C) **Ji 39**
- Giger, A. J.** Experimental Assessment of the Effect of Helium Pressure on Heat Transfer in the GCFR Core During a Protected Loss of Flow Accident (79-HT-4) (A) **O 92**
- Gil, R. A.** A New Heuristic for Improving the Efficiency of Numerically Controlled Punch Presses (78-DET-86) (A) **Ja 90**
- Gilbert, L. F.** Closed Loop Source Monitoring Saves Energy and Money (78-WA/APC-6) **Ap 103**
- Gilletta, J. L.** Experimental Study of the Transition from Forced to Natural Circulation in EBR-II at Low Power and Flow (79-HT-10) (A) **O 92**
- Gills, R. F.** A Discussion of the TRI-SEN M-300 Electronic Governor and Its Possible Impact on Energy (78-DGP-22) (A) **Ja 88**
- Ginell, W. S.** Nilonal Heat Engines for Low-Grade Thermal Energy Conversion **My 28**
- Ginsberg, T.** A Numerical Investigation of Thermal Convection in a Heat-Generating Fluid Layer (79-HT-103) (A) **N 108**
- Glasser, D. J.** Development of a Hydraulic Chambered, Actively Controlled Boring Bar (78-WA/Prod-20) (A) **My 100**
- Glasser, P. E.** Assessing Microwave Power (C) **D 52**
- Glasgow, D. A.** Stability Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (79-DET-63) (A) **N 113**
- Glass Fibers**
- Stress in Glass Fibers Induced by the Draw Force (78-WA/APM-21) (A) **My 104**
- Glass Flows**
- Numerical Investigation of Electric Field Effects on Unsteady Buoyant Molten Glass Flows (79-HT-98) (A) **N 107**
- Glass Hemispheres**
- Wide Angle Pinhole Camera (BTR) **F 57**
- Glass Melting Furnaces**
- Physical Modeling of Electric Glass Melting Furnaces for High Level Waste Immobilization (79-HT-97) (A) **N 106**
- Glass Particles**
- Heat Transfer Mechanisms Near Horizontal Heat Exchange Tubes in an Air Fluidized Bed of Uniformly Sized Glass Particles (79-HT-88) (A) **N 106**
- Glass Windows**
- Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) (A) **F 130**
- Glassman, I.** An Analysis of the Heat Transfer Mechanisms in Horizontal Flame Propagation (79-HT-25) (A) **O 93**
- Glaub, J. C.** Thermal Characteristics of Hydroponic Growing Beds (78-WA/HT-53) **Ap 92**
- Glaucoma**
- Laser Treatment for Glaucoma (IF) **N 75**
- Gleich, D.** High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**
- Glenn, G. S.** Development and Characterization of an Evaporation Cold Plate for Thermal Control of Avionic Equipment (79-ENAs-4) (A) **O 86**
- Glicksman, L. R.** Heat and Mass Transfer in Fixed Bed at Low Reynolds Numbers (79-HT-91) (A) **N 107**
- Global Optimum**
- Global Noniterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) (A) **Mr 86**
- Globular Clusters**
- Unusual Satellite Data—A Black Hole? (BTR) **Je 50**
- Glower, D. D.** Rating the Engineering Schools (EN) **Ap 57**
- Gnirk, P. F.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 126**
- Godet, M.** An Attempt to Provide a Unified Treatment of Tribology Through Load Carrying Capacity, Transport and Continuum Mechanics (79-Lub-18) (A) **D 103**; Relation Between Wear of Steels and Debris Transport at High Temperature (950°C) (79-Lub-11) (A) **D 103**; Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**
- Godfrey, T. G.** Fireside Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Ji 97**
- Goela, J. S.** (recipient) Arthur L. Williston Medal **Ja CR-13**; Wind Power Through Kites **Je 42**
- Goenka, P. K.** Spherical Bearings: Static and Dynamic Analysis Via the Finite Element Method (79-Lub-1) (A) **D 102**
- Goetz, G. J.** Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) (A) **Je 97**
- Gogola, G. S.** Electrostatic Precipitator's Performance in Cycling Duty (79-JPGC-Pwr-6) (A) **D 98**
- Golan, I.** Management of the Product Liability Engineer (78-WA/Mgt-4) (A) **Je 90**
- Golant, A. S.** Effective Reliability Testing and Growth Measurement (78-WA/Aero-21) (A) **Ap 102**
- Gold, H.** (author) Water in Synthetic Fuel Production: The Technology and Alternatives (CB) **Ja 100**
- Goldberg, P.** Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT/ter-12) (A) **O 83**
- Goldstein, R. J.** Elections to Fellow Grade **Mr 80**; (recipient) Heat Transfer Memorial Award **Ja CR-13**
- Gomyes, D. C.** Design and Operation of Large Fossil-Fueled Steam Turbines Engaged in Cyclic Duty (79-JPGC-Pwr-7) (A) **D 97**
- Goo, S. D.** Application of Ion-Drag Air Jets to Augment Airborne Equipment Cooling (79-ENAs-12) (A) **O 87**
- Goodman, F. R., Jr.** Photovoltaic Electric Power Generation from a Utility Perspective (79-Sol-18) (A) **Ag 94**
- Gordon, G.** Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**
- Gordon, J. L.** Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 98**
- Goshorn, K. D.** An Accelerated Durability Test Program for Diesel Truck Engines (78-DGP-23) (A) **Ja 88**
- Gostelow, J. P.** (recipient) Gas Turbine Award **Ja CR-13**
- Gottfredson, R. K.** Torpedo Propulsion Systems (78-WA/Aero-13) (A) **Ap 101**
- Goulas, A.** A Blade-to-Blade Solution of the Flow in a Centrifugal Compressor Impeller with Splitters (79-GT/ter-17) (A) **O 84**; Measured Velocity Characteristics of the Flow in the Impeller of a Centrifugal Compressor (79-HT-32) (A) **O 84**; The Production of Borticity and Its Effects on the Flow in Centrifugal Compressor Impellers (79-GT-113) (A) **Ji 96**
- Government Activities**
- Status of Coal Gasification Program (79-PVP-46) (A) **S 96**
- Government Buildings**
- The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) (A) **My 95**
- Government Funding**
- On Energy Invention Funding (C) **Ji 38**
- Government Incentives**
- Proposed Incentives Hinder Solar System Sales (NR) **S 70**
- Government Regulations**
- Rails Still Ail (NR) **Ji 81**
- Governmental Actions**
- Accelerating the Commercialization on New Technologies (78-WA/TS-4) (A) **Je 94**
- Goody, G. D.** Resource Utilization and Design Aspects of the Spectral Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**
- Goyal, M. R.** Simulation of a Turbocharged Diesel Engine to Predict the Transient Response (78-DGP-11) (A) **Ja 87**
- Grabowski, B.** The Vibrational Behavior of a Turbine Rotor Containing a Transverse Valve (79-DET-67) (A) **N 115**
- Gradient Method**
- A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 98**
- Graduate Program**
- Joint Degree Program (EN) **Je 88**
- Graduate Scholarships**
- Scholarships in Marine Engineering (EN) **Ja 80**
- Graduating Engineers**
- Survey Shows Engineering Graduates Have It Good (EN) **My 67**
- Grady, P. L.** The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Je 93**; Measurement of the Thermal Insulation Properties of Fabrics (79-Tex-3) (A) **D 99**
- Graf, T. E.** DD-963 Class Waste Heat Recovery System Experience (79-GT-159) (A) **Ag 100**
- Graham, B. J.** Application of Solar Energy to Continuous Belt Dehydration (79-Sol-27) (A) **Ag 95**
- Graham, C. G.** Shock Boundary Layer Interaction on High Turning Transonic Turbine Cascades (79-GT-37) (A) **Ag 98**
- Graham, J. W.** A New Proppant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**
- Graham, L.** Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**
- Graham, R. W.** Elections to Fellow Grade **Mr 80**; Fundamental Mechanisms That Influence the Estimate of Heat Transfer to Gas Turbine Blades (79-HT-43) (A) **N 102**
- Grammar Lesson**
- Singular Confusion (C) **Ji 39**
- Granite Cutting**
- Effects of Al<sub>2</sub>O<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**
- Grant Proposals**
- Getting a Grant: How to Write Successful Grant Proposals (CB) **Ag 108**
- Grants**
- Bio-Energy Research Grants (ES) **S 21**
- Engineering Research Grants (NR) **O 57**



Fusion Program (EN) **My 78**

#### Graphical Solutions

Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) (A) **Ap 95**

#### Graphite/Epoxy Composites

A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**

#### Graphite/Epoxy Laminates

Cross Reinforcement in a GR/EP Laminate (78-WA/Aero-7) (A) **Ap 100**

Gritsch, S. ASME Strategies and Structures for Century Two—Part I: Structures **D 26**

Graves, R. L. Heat Transfer and Pressure Drop in Gas-Cooled Fluidized-Bed Combustors for Gas Turbine Systems—Analysis and Application to Design (79-HT-87) (A) **N 106**

#### Gravity Force

Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 88**

#### Gravity Fractionation

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 31**

Gray, I. (author) The Engineer in Transition to Management (CB) **N 119**

Gray, K. E. Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**

Gray, R. Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**

Gray, R. A., Jr. Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**

Graziani, R. A. An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Jl 95**

Green, C. H. The Development of the Olympus "C" Gas Generator (79-GT-122) (A) **Jl 97**

Green, M. A. Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Je 92**

Green, T. F. Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation (79-HT-36) (A) **O 95**

Greene, G. A. Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**

Greene, J. D. Stabilization of Crimp in Bulk Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Ja 92**

Greene, N. D. (author) Corrosion Engineering (CB) **O 97**

Greenfield, L. P. The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**

Greenhalf, P. D. Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Jl 95**

#### Greenhouse Environmental Factors

Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**

Greenlee, W. J. Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-6) (A) **Je 93**

Gregory, R. S. Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) (A) **Ja 95**

Griffin, F. P. Heat Exchanger Performance in Latent Heat Thermal Energy Storage (79-HT-17) (A) **O 92**

Griffin, J. H. Friction Damping of Resonant Stresses in Gas Turbine Engine Airfoils (79-GT-109) (A) **Ag 99**

Griffiths, J. F. Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**

#### Grinders

A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**

#### Grinding

Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/Prod-26) (A) **My 100**

A Mathematical Model for Drill Point Design and Grinding (78-WA/Prod-35) (A) **My 101**

Some Aspects of Flat Surface Grinding with Intermittent

Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**

#### Grinding Process

An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**

Grohn, M. A. Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**

Gross, G. P. The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) (A) **Ja 88**

Gross, R. J. Numerical Simulation of Dual-Media Thermal Energy Storage Systems (79-HT-35) (A) **O 94**

Gross, W. P. A Comprehensive Energy Analysis Applied to an Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**

Grossman, G. Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**

#### Ground Support Services

Thermal Design for the Infrared Astronomical Satellite (IRAS) Telescope System (79-ENAS-38) (A) **O 90**

#### Ground Testing

Engine Life Usage Experience of YF17/YJ101 Flight and Ground Testing (78-WA/GT-11) (A) **Ap 89**

#### Group Life Insurance

ASME Life Insurance Repays 50 Percent **O 73**

#### Group Scheduling Model

Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**

#### Growth Measurement

Effective Reliability Testing and Growth Measurement (78-WA/Aero-21) (A) **Ap 102**

Gugel, E. Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Jl 95**

Guenther, D. A. Management of the Product Liability Engineer (78-WA/Mgt-4) (A) **Je 90**

Guhler, M. An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **My 95**

#### Guidance System

Satellite Signals to Guide Missiles (BTR) **D 60**

#### Guidebook

1979 Dodge Guide to Public Works and Heavy Construction Costs (CB) **O 96**

Metric Guide to Mechanical Design and Drafting (CB) **O 96**

#### Guidelines

Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 99**

Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**

Auditing an Engineering Organization (78-WA/Mgt-7) (A) **Je 91**

Guidelines Available (PS) **O 67**

A Pragmatic Approach to the Engineer's Involvement in Public Policy Making (78-WA/TS-1) (A) **Je 94**

Using Simulation to Solve Problems (CB) **O 97**

#### Guidevane

Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Je 100**

Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**

Guillemine, P. Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **Jl 90; Ag 97**

Guillumin, J.-C. A New Rigid Frame Truck (79-RT-5) (A) **Ag 98**

Guins, S. Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**

#### Gunboats

Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **Jl 97**

Gunderson, R. H. Deepwater Production Risers (78-Pet-13) (A) **F 122**

Gunewardana, D. R. Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 96**

Gunnerson, F. S. A Prediction of the Minimum Film Boiling Conditions for Spherical and Horizontal Flat Plate Heaters (79-HT-45) (A) **N 102**

Gunter, E. J. A Finite Length Bearing Correction Factor

for Short Bearing Theory (79-Lub-13) (A) **D 103**

Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Jl 99**

Gunther, W. H. Heat Transfer from Heat Generating Molten UO<sub>2</sub>: Interpretations of the Available Experimental Data (79-HT-115) (A) **N 108**

Guppy, J. G. Dynamic Simulation of LMFBR Plant Under Natural Circulation (79-HT-6) (A) **O 91**

Gupta, B. D. Application of Extremal Distributions in the Design of Thermal Systems (79-DET-5) (A) **N 109**

Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) (A) **Mr 85**

Optimum Design of Air-Conditioned Buildings (79-DET-119) (A) **D 107**

Gupta, B. S. Stabilization of Crimp in Bulk Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Ja 92**

Gupta, G. D. Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) (A) **Ag 104**

Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**

Gupta, L. S. Dynamics Stress Analysis of a Spur Gear Tooth (79-DET-38) (A) **N 112**

Gupta, P. K. Dynamics of Rolling-Element Bearings Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) (A) **Ja 95**

Dynamics of Rolling-Element Bearing Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) **Ja 96**

Dynamics of Rolling-Element Bearings Part III: Ball Bearing Analysis (78-Lub-32) (A) **Ja 96**

Dynamics of Rolling-Element Bearing Part IV: Ball Bearing Results (78-Lub-33) (A) **Ja 96**

Gupta, P. (recipient) Burt L. Newkirk Award **Ja CR-13**

Gupta, Rao, M. S. Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**

Gutmann, F. T. (author) Metric Guide to Mechanical Design and Drafting (CB) **O 96**

Gyobu, I. Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

Gyroscopic Optical Gyroscope (BTR) **Ja 48**

Gyroscopic Flow Meter **Mr 36**

Conolits/Gyroscopic Flow Meter

## H

Haas, J. E. Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.7-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Jl 91**

Hackett, C. E. Numerical Simulation of Dual-Media Thermal Energy Storage Systems (79-HT-35) (A) **O 94**

Halt, A. J. Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**

Haghwars, N. Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

Hahn, G. E. Down on Darwin (C) **O 42**

Halal, W. E. An Incremental Form of the Single-Integral Nonlinear Viscoelastic Theory for Electric-Plastic-Creep Finite Element Analysis (79-PVP-114) (A) **S 103**

Haktanir, S. A. An Approximate Method for the Determination of the Response Frequency of Pipe Whip (79-PVP-123) (A) **S 104**

Hale, D. A. Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) (A) **S 102**

Hale, L. A. Finite Element Analysis of Transient Natural Convection in Enclosed Spaces (79-HT-49) (A) **N 110**

Half-Space Soil Models

Unbalanced Response of a Large Rotor-Pedestal Foundation System Using an Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**

Hall, P. F. Aircraft Humidification System Development (79-ENAS-8) (A) **O 87**

Hall, C. W. Update: Mechanical Engineering Education in the People's Republic of China **O 36**

Hall, J. L. Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**

Hall, R. E. Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**

Hall, W. E., Jr. Optimal Control of Turbine Engines (78-WA/DSC-33) (A) **Ap 99**



- Haller, G. F.** Return to the Stone Age (C) **F 55**
- Hallet, J.** Power Characteristics of a Continuous Crystallization Latent Heat Recovery System (79-Sol-21) (A) **Ag 94**
- Hallick, T. M.** Bosch: An Alternate CO<sub>2</sub> Reduction Technology (79-ENAS-32) (A) **O 89**
- Halsted, D. M. III** Optimum Vibration Absorbers for Linear Damped Systems (78-WA/DE-22) (A) **Mr 96**
- Ham, I.** Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**
- Hamed, A.** Viscous Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**; Study of Metals Erosion in High Temperature Coal Gas Streams (79-GT-88) (A) **Ag 98**
- Hamilton, J. F.** Note on Comparison of Nonlinear Optimization Methods (79-DET-118) (A) **D 107**
- Hamm, J. R.** Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Jl 103**
- Hammit, F. G.** Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Je 89**
- Hammond, B.** Solar Photovoltaic Power for Residential Use (79-Sol-11) (A) **Ag 93**
- Hammond, D. C., Jr.** Operation of GT-225 Diffusion-Flame Combustor on Alternative Fuels Performance, Durability and Emissions (79-GT-138) (A) **Jl 92**
- Hamrock, B. J.** Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Je 95**; Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus II—Starved Conjunction (78-Lub-1) (A) **Je 93**
- Han, J. T.** A Fluid Mechanics Model to Estimate the Leakage of Incompressible Fluids through Labyrinth Seals (79-FE-4) (A) **O 85**
- Hand Controls**  
The Performance of Automotive Hand Controls (78-WA/DSC-38) (A) **Ap 99**
- Handicap Aid**  
Electronic Pen Pals (NB) **Jl 64**
- Hanks, N. L.** Employee Performance Appraisal (78-WA/Mgt-1) (A) **Je 90**; **Jl 32**
- Hannah, R. R.** A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**
- Hannemann, R. J.** An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **Mr 95**; Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) (A) **Mr 91**
- Hannoyer, M. J.** Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) (A) **S 105**; Part 2: Experiments (79-APM-4) (A) **S 105**
- Hanrahan, E. J.** Nonproliferation Alternative Systems Assessment Program (NASAP)—An Overview (78-WA/NE-10) (A) **Mr 89**
- Hansen, E. B.** Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104**
- Hansen, E. C.** Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 99**
- Hansen, E. J.** Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Jl 90**
- Hansen, F. D.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 126**
- Hansen, N. E.** Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**
- Hanson, D. L.** Experimental Assessment of the Effect of Helium Pressure on Heat Transfer in the GCFB Core During a Protected Loss of Flow Accident (79-HT-4) (A) **O 92**
- Hanson, M. E.** Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**
- Hard Surfaces**  
Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Je 96**
- Hardenberg, H. O.** Air Consumption and Nitrogen Oxide Emissions of Charge Cooled Engines (78-DGP-12) (A) **Je 87**; The Influence of Cylinder Cutoff on Fuel Consumption and Emissions of Diesel Engines (78-DGP-13) (A) **Je 87**
- Hardening Response**  
On the Hardening Response in Small Deformation of Metals (78-WA/APM-17) (A) **My 104**
- Hardness**  
Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/Prod-15) (A) **My 99**
- Hardware Design Parameters**  
Cogeneration—Some Hardware and System Design Parameters (78-IPC-Pwr-6) (A) **Ja 91**
- Hardware Development**  
Electronic Hardware and Its Impact on Numerical Control (78-WA/DSC-16) (A) **Ap 95**
- Hardwick, M.** Student Coverage Appreciated (C) **Jl 39**
- Hardy, J. E.** Laser Anemometer Measurements in Turbulent Natural Convection over a Vertical Flat Surface (79-HT-106) (A) **N 108**
- Hark, R. R.** For Spring Materials: A Simple Test of Stress Relief Annealing **F 38**
- Harlow, M. W.** Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**
- Harmonic Analysis**  
Harmonic Analysis of Dynamic Systems with Non-Symmetric Nonlinearities (78-WA/DSC-10) (A) **Ap 94**
- Harmonic Excitation**  
The Application of the Ritz Averaging Method to Determining the Response of Systems with Time Varying Stiffness to Harmonic Excitation (79-DET-20) (A) **N 110**
- Harmonic Holes**  
Harmonic Holes for Nonconstant Fields (79-APM-30) (A) **S 108**
- Harmonic Waves**  
Harmonic Waves in Layered Composites: New Bounds on Eigenfrequencies (78-WA/APM-23) (A) **My 105**
- Harnet, T. J.** Electro-Fluid Pulse-Width Modulated Valve (78-WA/DSC-8) (A) **Ap 94**
- Harpole, G. M.** Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) (A) **S 105**
- Harrington, C. D.** Manoe Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**
- Harrington, L.** A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**
- Harriott, L. C.** The Changing Technical Life of Engineers **Ja 29**
- Harris, L.** Consideration of Condenser Height in the Optimization of Power Plant Condensers (79-JPGC-Pwr-2) (A) **D 97**
- Harris, S. D.** Numerical Solution of Three-Dimensional Natural Convection by the Strongly Implicit Procedure (78-WA/HT-10) (A) **Mr 93**
- Harrison, S. F.** Elections to Fellow Grade **Jl 88**
- Hart, R. C.** Elections to Fellow Grade **Je 85**
- Hartenberg, R. S. (editor)** National Historical Mechanical Engineering Landmarks (CB) **O 96**
- Hartnett, M. J.** The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) (A) **Je 93**
- Hashish, M.** Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**
- Haslett, R.** Modular Heat Pipe Radiators for Enhanced Shuttle Mission Capabilities (79-ENAS-17) (A) **O 88**
- Hall, S. K.** Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Ja 90**
- Haughton, K. E.** Elections to Fellow Grade **Mr 80**
- Hauser, G. M.** Heat Transfer in Thermally Developing, Absorbing, Emitting and Scattering Slug and Couette Flows Between Parallel Plates with Collocation Method (79-HT-20) (A) **O 93**; Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**
- Hawaiian Sugarcane Plantations**  
Hawaiian Sugarcane Energy Plantations (79-Sol-31) (A) **Ag 96**
- Hawkins, G. T.** Utilization of Coal-Oil and Coal-Oil Water Mixtures in Conventional Fuel Oil Systems (79-IPC-Fu-1) (A) **D 101**
- Hawthorne, J. R.** Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**
- Hay, N.** The Film Cooling Effectiveness of Double Rows of Holes (79-GT/Isr-10) (A) **O 83**
- Haynes, H. H.** External Hydrostatic Pressure Loading of Concrete Cylinder Shells (79-PVP-125) (A) **S 104**
- Hazard, H. R.** Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**
- Hazardous Materials Container**  
Scale Model Impact Tests of Hazardous Material Container Designed to Section VIII, Division 1, of the ASME Code (79-PVP-42) (A) **Ag 106**
- Hazards**  
Residual Safety Hazards (78-WA/DE-23) (A) **Mr 87**
- Head Strength Evaluation**  
Head Strength Evaluation of Recessed Threaded Fasteners (79-DET-117) (A) **D 107**
- Healey, A. J.** Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**
- Health Effects**  
Radiation's Health Effects (BTR) **D 62**
- Health Insurance Plans**  
ASME Members' Health Insurance Plans (PS) **Mr 70**
- Health Uses**  
The Corporate Uses of Precious Metals (BTR) **Ap 57**
- Heep, M. P.** Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 98**; The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Jl 103**
- Heare, J.** The Role of State Government Industrial Energy Conservation (78-TS-7) (A) **F 130**
- Hearing Aids**  
Implantable Digital Hearing Aid (BTR) **Ap 48**
- Hearing Conservation**  
Industrial Hearing Conservation (NB) **Ag 82**
- Heart Monitor**  
Microcomputer Monitors Heart (BTR) **Je 47**
- Heat**  
Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Jl 101**
- Heat Absorbers**  
Solar Energy Concentrators (ES) **F 24**
- Heat Barrier**  
Exotic Tiles Solve Shuttle Reentry Problem (BTR) **My 48**
- Heat Beds**  
The Effect of Applied Temperature Gradients on the Convective Instability of a Volumetrically Heated Porous Bed (79-HT-30) (A) **O 94**
- Heat Conduction**  
Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**  
The Effect of the Longitudinal Heat Conduction and the Flow Nonuniformity on the Thermal Performance of Cross-Flow Heat Exchanger (78-WA/HT-51) (A) **Mr 96**  
Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Jl 98**  
Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) (A) **S 108**
- Heat Conduction Transients**  
Long-Time Solutions to Heat-Conduction Transients with Time-Dependent Inputs (79-HT-66) (A) **N 104**
- Heat Energy**  
Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Je 90**  
Solar Ponds (IF) **S 85**
- Heat Engines**  
Nitinol Heat Engines for Low-Grade Thermal Energy Conversion **My 28**
- Heat Exchange Tubes**  
Heat Transfer Mechanisms Near Horizontal Heat Exchange Tubes in an Air Fluidized Bed of Uniformly Sized Glass Particles (79-HT-88) (A) **N 106**
- Heat Exchanger Materials**  
Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Jl 103**
- Heat Exchanger Surfaces**  
On the Optimal Tube Spacing For Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**
- Heat Exchangers**  
Advanced Heat Exchanger Configurations for Coal-Fired Fluidized Beds (78-WA/HT-40) (A) **Ap 91**  
Aerodynamics of the Heat Exchangers and Their Arrangement in Large Dry Cooling Towers (78-WA/HT-19) (A) **Ap 91**  
Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Jl 104**  
Big Question for Solar Power (ES) **Ja 19**

- Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**
- Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**
- The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 89**
- Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**
- Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**
- The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**
- Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers (78-WA/HT-18) (A) **Ap 90**
- Expand Sun-Powered Irrigation (BTR) **Ji 45**
- First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Ji 94**
- Geothermal Energy (EN) **Ji 88**
- Geothermal Power and Water Production Studies at the University of California (78-WA/Enr-7) (A) **Je 93**
- Heat Exchanger Market (IF) **Ja 55**
- Heat Exchangers for OTEC (ES) **My 20**
- Heat Exchanger Performance in Latent Heat Thermal Energy Storage (79-HT-17) (A) **O 92**
- An IHX Design for Pool Type LMFB System Application (79-NE-3) (A) **S 104**
- Liquid-Coupled Indirect-Transfer Exchangers Application to the Diesel Engine (78-DGP-21) (A) **Ja 88**
- Ocean Thermal Plants: Heat Exchangers Key Problem (BTR) **Ap 40**
- Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**
- The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**
- A Parametric Study of a Direct Contact Heat Exchanger (78-WA/HT-16) (A) **Mr 94**
- Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Je 96**
- Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**
- The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ji 96**
- Simplified Inelastic Analysis in Helical Coil Heat Exchanger Design (79-NE-2) (A) **S 104**
- Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 96**
- Theoretical Investigation of the Dynamic Characteristics of Heat Exchangers with Double Phase Change (79-HT-81) (A) **N 105**
- The Use of Heat Exchangers with Thermoexcel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**
- The Wave of the Future (ES) **D 20**
- Heat Extraction**
- The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**
- Heat Flux**
- An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**
- Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-60) (A) **F 127**
- Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100**
- Low Pressure Rod Bundle Critical Heat Flux Tests (79-HT-46) (A) **O 95**
- Heat Flux Sensor**
- Isothermal Heat Flux Sensor (78-WA/HT-14) (A) **Mr 94**
- Heat Generating Fluids**
- Natural Convection in Heat Generating Fluids in Cavities (79-HT-95) (A) **N 107**
- Heat Generation**
- Heat Transfer for Laminar, Uniform Heat Generating Fluid Flow in a Curved Pipe (79-HT-93) (A) **N 107**
- Natural Convection of a Heat Generating Fluid in a Closed Cavity (78-WA/HT-8) (A) **Mr 93**
- Refuse-Incinerating Power Station (IF) **Ap 81**
- Heat Generator**
- Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Ji 95**
- Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Ji 97**
- Heat Loss**
- Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**
- Heat Pipe Mirrors**
- Heat Pipe Mirrors for High-Power Lasers **My 34**
- Heat Pipe Radiators**
- Optimization of Large Heat Pipe Radiators for Long Life Space Heat Rejection Systems (79-ENAs-25) (A) **O 88**
- Heat Pipes**
- Summer Cooling with Winter Ice (BTR) **D 55**
- Heat Production**
- The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**
- Heat Pumps**
- Community Heat Pumps (ES) **My 20**
- Home Heat and Hot Water from Ice (BTR) **Ap 46**
- Ice Source Heat Pumps (ES) **Ji 21**
- Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Je 94**
- Magnetic Heat Pump (BTR) **Je 48**
- Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**
- Heat Recovery**
- Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems (78-WA/HT-63) (A) **Ap 93**
- Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**
- Waste Heat Recovery (ES) **N 32**
- Heat Recovery Boilers**
- The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**
- Heat Recovery Systems**
- Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery Systems (78-Pet-3) (A) **Ja 97**
- Focusing on Paper Mills (ES) **Ja 19**
- Ten Designers Cited for Energy-Efficient Buildings (NR) **F 65**
- Heat Reflection**
- Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**
- Heat Rejection Systems**
- Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Enr-2) (A) **Je 92**
- Heat Release Distribution**
- Influence of Heat Release Distribution on the Acoustic Response of Long Burners (79-DET-31) (A) **N 112**
- Heat Removal**
- Temperatures of EBS-11 Subassemblies in Air or Argon without Forced Cooling (79-HT-7) (A) **O 91**
- Heat Removal Systems**
- Use of Vortex Diodes Applied to Post Accident Heat Removal Systems (79-HT-9) (A) **O 92**
- Heat Sink**
- Experimental Study of the Inflow Effects on a Natural Convection Heat Sink (78-WA/HT-30) (A) **Ap 92**
- Heat Storage**
- A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**
- Heat Storage System**
- On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**
- Heat Storage Unit**
- Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation (79-HT-36) (A) **O 95**
- Heat Source Temperatures**
- Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Ji 91**
- Heat Supply**
- A Simple Solar Gas Turbine Plant (79-GT-90) (A) **Ji 95**
- Heat Transfer**
- Advanced Heat Exchanger Configurations for Coal-Fired Fluidized Beds (78-WA/HT-40) (A) **Ap 91**
- Aerodynamics of the Heat Exchangers and Their Arrangement in Large Dry Cooling Towers** (78-WA/HT-19) (A) **Ap 91**
- The Analysis of Heat Transfer with and without Condensation in a Heat Pipe Heat Exchanger (78-WA/HT-59) (A) **Ap 92**
- An Analysis of the Heat Transfer Mechanisms in Horizontal Flame Propagation (79-HT-25) (A) **O 93**
- An Analysis of Heat Transfer in a Turbulent Heat-Generating Flow with High Prandtl Numbers (79-HT-114) (A) **N 106**
- An Analysis of the Thermoelastic Problem in a Slab (79-HT-59) (A) **N 103**
- The Analysis of Catalytic Heat Exchangers for Diffusion Limited Reactions (79-HT-53) (A) **N 103**
- An Analytical and Experimental Investigation of a Rotating Boiler (79-HT-33) (A) **O 94**
- An Analytical Study of Heat Transfer to a Horizontal Cylinder in a Large Particle Fluidized Bed (79-HT-78) (A) **N 105**
- Applications of Numerical Heat Transfer (CB) (A) **My 107**
- Asymmetric Boundary Layer on a Nonisothermally Heated Cone (79-HT-108) (A) **N 108**
- Baseline Data on Film Coefficient for Heating Isobutane Inside a Tube at 4.14 MPa (600 psia) (79-HT-14) (A) **O 92**
- The Behavior of a Closed-Cycle Gas Turbine with Time Dependent Operating Conditions (79-GT/Isr-2) (A) **O 83**
- Bismuth Magnetoresistive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**
- Bubble Growth During Decompression of a Liquid (79-HT-73) (A) **N 104**
- Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-Rod Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**
- Catalytic Combustion for System Applications (79-HT-54) (A) **N 103**
- Characteristics of a Liquid-Liquid Fluidized Heat Exchanger (79-HT-80) (A) **N 105**
- Chebyshev Matrix Methods for the Heat Equation: Convergence and Accuracy (79-HT-62) (A) **N 104**
- Combined Convective Heat Transfer From Vertical Cylinders in a Horizontal Flow (78-WA/HT-45) (A) **Mr 96**
- Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**
- Conceptual Design of Large Heat Exchangers for Ocean Thermal Energy Conversion (78-WA/HT-32) (A) **Mr 95**
- Contact Conductance Between Parallel Tubes (79-HT-85) (A) **N 106**
- Conduction-Heating Considerations in Thermal Processing of Canned Foods (78-WA/HT-55) (A) **Mr 96**
- Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monoactive Electrocoagulation (78-WA/HT-66) (A) **Ap 93**
- Cooling Air in Turbulent Flow with Multi-Passage Internally Finned Tubes (78-WA/HT-52) (A) **Mr 96**
- Depressurization of Internally Heated Boiling Pools (79-HT-101) (A) **N 107**
- Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-28) (A) **Ji 90**
- Determination of Specific Heat of Meat (78-WA/HT-57) (A) **Mr 97**
- Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**
- Development of Continuum Element-Two-Dimensional Transient Nonlinear Heat Conduction (79-HT-58) (A) **N 103**
- Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**
- Diffuse-Specular Analysis of Axisymmetric Surfaces with Application to the Design of Parabolic Reflectors (79-HT-22) (A) **O 93**
- Directional Dependence and Non-Uniformity of Joule Heating in Natural Convection Experiments (79-HT-96) (A) **N 106**
- Double-Diffusive Convection in an Infinitely Tall Slot (78-WA/HT-8) (A) **Mr 93**
- Dropletwise Condensation on Rough Aluminum Surfaces (78-WA/HT-42) (A) **Mr 96**
- Dynamic Simulation of LMFB Plant Under Natural Cir-

- ulation (79-HT-6) (A) **O 91**
- Eddy Viscosity Calculations of Turbulent Buoyant Plumes (79-HT-51) (A) **N 103**
- The Effect of Applied Temperature Gradients on the Convective Instability of a Volumetrically Heated Porous Bed (79-HT-30) (A) **O 94**
- Effect of Cell Size on Natural Convection in High L/D Tilted Rectangular Cells Heated and Cooled on Opposite Faces (78-WA/HT-5) (A) **Mr 93**
- Effect of Contaminants on Critical Heat Flux at Low Pressures (79-HT-72) (A) **N 104**
- Effect of Flow Channel Orientation on Rewetting Phenomenon (78-WA/HT-31) (A) **Mr 95**
- The Effect of the Longitudinal Heat Conduction and the Flow Nonuniformity on the Thermal Performance of Cross-flow Heat Exchanger (78-WA/HT-51) (A) **Mr 96**
- Effect of Partial Flow Blockage on Rewetting of Vertical and Horizontal Circular Ducts (79-HT-44) (A) **O 95**
- The Effect of Spacing on the Turbulent Burning of Vertical Parallel Walls (79-HT-26) (A) **O 93**
- Effect of Thickness on Moisture Migration in Light-Weight Concrete Slabs (79-HT-2) (A) **O 92**
- Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers (78-WA/HT-18) (A) **Ap 90**
- Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**
- Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**
- Experimental Assessment of the Effect of Helium Pressure on Heat Transfer in the GCFR Core During a Protected Loss of Flow Accident (79-HT-4) (A) **O 92**
- An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**
- Experimental Investigation of Liquid Metal Turbulent Heat Transfer under Transverse Magnetic Field (79-HT-41) (A) **O 94**
- Experimental Investigation of Transient Asymmetric Heating in Vertical and Inclined Rectangular Enclosure (79-HT-90) (A) **N 106**
- Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 94**
- An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Je 95**
- Experimental Study of the Inflow Effects on a Natural Convection Heat Sink (78-WA/HT-30) (A) **Ap 92**
- Experimental Study of the Transition from Forced to Natural Circulation in EBR-II at Low Power and Flow (79-HT-10) (A) **O 92**
- An Experimental Study of Transition and Turbulent Natural Convection in a Vertical Open-Ended Tube (79-HT-37) (A) **O 95**
- Finite Element Analysis of Transient Natural Convection in Enclosed Spaces (79-HT-49) (A) **N 102**
- Fire Characteristics Under the Influence of External Radiation (79-HT-71) (A) **N 104**
- Flow Dynamics of Volume-Heated Boiling Pools (79-HT-102) (A) **N 108**
- Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-6) (A) **Je 93**
- Free Convection Boundary Layers on a Non-Isothermal Vertical Flat Plate (79-HT-112) (A) **N 108**
- Friction and Heat Transfer in Turbulent Free Swirling Flow in Pipes (79-HT-39) (A) **O 94**
- Fundamental Mechanisms That Influence the Estimate of Heat Transfer to Gas Turbine Blades (79-HT-43) (A) **N 102**
- Gas Stream Composition and Temperature Determination in a Coal-Fired MHD Simulation Facility (78-WA/HT-23) (A) **Mr 94**
- Generalized Laminar Heat Transfer from the Surface of a Rotating Disk (78-WA/HT-29) (A) **Mr 95**
- Heat Exchanger Performance in Latent Heat Thermal Energy Storage (79-HT-17) (A) **O 92**
- Heat and Mass Transfer in a Catalytic Combustor (79-HT-57) (A) **N 103**
- Heat and Mass Transfer in Fixed Beds at Low Reynolds Numbers (79-HT-91) (A) **N 107**
- Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material—Solid Helium (78-WA/HT-12) (A) **Mr 94**
- Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**
- Heat Transfer in Air Enclosures of Aspect Ratio Less Than One (78-WA/HT-7) (A) **Mr 93**
- Heat Transfer in a Bottom Burning Oil Shale Retort (79-HT-3) (A) **O 92**
- Heat Transfer Characteristics of a Spark-Ignition Engine (79-HT-76) (A) **N 105**
- Heat Transfer by a Corona Wind Heat Exchanger (78-WA/HT-43) (A) **Ap 92**
- Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**
- Heat Transfer to an Evaporating Floating, N-Pentane Lens (79-HT-13) (A) **O 92**
- Heat Transfer from Heat Generating Molten UO<sub>2</sub>: Interpretation of the Available Experimental Data (79-HT-115) (A) **N 108**
- Heat Transfer Immediately Downstream of the Quench Front During Reflood (79-HT-48) (A) **N 102**
- Heat Transfer and the Killing of Bacteria in Thermal Sterilization of Meat Roll (78-WA/HT-56) (A) **Mr 97**
- Heat Transfer for Laminar, Uniform Heat Generating Fluid Flow in a Curved Pipe (79-HT-93) (A) **N 107**
- Heat Transfer Mechanisms Near Horizontal Heat Exchange Tubes in an Air Fluidized Bed of Uniformly Sized Glass Particles (79-HT-88) (A) **N 106**
- Heat Transfer to Plane Turbulent Wall Jet Discussion on the Reynolds Analogy Factor (79-HT-40) (A) **O 94**
- Heat Transfer and Pressure Drop in Gas-Cooled Fluidized-Bed Combustors for Gas Turbine Systems—Analysis and Application to Design (79-HT-87) (A) **N 106**
- Heat Transfer in Thermally Developing, Absorbing, Emitting and Scattering Slug and Couette Flows Between Parallel Plates with Collocation Method (79-HT-20) (A) **O 93**
- Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**
- Heat Transfer in Turbulent Recirculatory Flows Affected by Buoyancy Forces in Rectangular Cavities (79-HT-77) (A) **N 105**
- On the Horizontal Recirculation in Water Bodies Due to Thermal Discharge (79-HT-84) (A) **N 106**
- Ignition of Pyrolyzing Media under Convective Heating (79-HT-27) (A) **O 94**
- The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**
- Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**
- Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Je 93**
- Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Je 93**
- An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **Mr 98**
- An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **Mr 95**
- Isothermal Heat Flux Sensor (78-WA/HT-14) (A) **Mr 94**
- An Iterative Solution for Anisotropic Radiative Transfer in a Slab (79-HT-23) (A) **O 94**
- Laminar Film Condensation Over a Vertical Circular Cylinder with Effect of Electrical Field (78-WA/HT-49) (A) **Mr 96**
- Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**
- Laminar Heat Transfer in Porous Ducts with Variable Suction (78-WA/HT-41) (A) **Mr 96**
- Laminar Wake Flame Heights (79-HT-68) (A) **N 104**
- Laser Anemometer Measurements in Turbulent Natural Convection over a Vertical Flat Surface (79-HT-106) (A) **N 108**
- Liquid Droplet Heating and Vaporization in the Catalytic Combustor (79-HT-52) (A) **O 92**
- Local Heat Transfer Coefficients Around Horizontal Tubes in Fluidized Beds (79-HT-75) (A) **N 105**
- Local Heat Transfer Measurements in and Downstream from a U-Bend (79-HT-82) (A) **N 105**
- Long-Time Solutions to Heat-Conduction Transients with Time-Dependent Inputs (79-HT-66) (A) **N 104**
- Low Pressure Rod Bundle Critical Heat Flux Tests (79-HT-46) (A) **O 95**
- Low Reynolds Number Effects on Sharp Cone Turbulent Heat Transfer Under Hypersonic Wind Tunnel Conditions (79-HT-89) (A) **N 106**
- Mass Transfer at the Edge of a Rotating Disk (79-HT-34) (A) **O 95**
- Measured Velocity Characteristics of the Flow in the Impeller of a Centrifugal Compressor (79-HT-32) (A) **O 94**
- The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**
- Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Je 90, Ap 98**
- Mechanism of Freeze-Drying of Porous Bodies by Conductive Heat Transfer (79-HT-86) (A) **N 106**
- Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ap 92**
- Mixed Layer Growth and Heat Transfer in a Stratified Fluid Heated from Below (79-HT-107) (A) **N 108**
- A Model for the Angular Distribution of Sky Radiance (79-HT-11) (A) **O 92**
- A Model of MHD Natural-Convection Heat Transfer from a Finite Cylinder (78-WA/HT-24) (A) **Mr 95**
- Momentum and Temperature Balance Measurements in an Axisymmetric Turbulent Plume (79-HT-42) (A) **O 94**
- Natural Convection in Heat Generating Fluids in Cavities (79-HT-95) (A) **N 107**
- Natural Convection of a Heat Generating Fluid in a Closed Cavity (78-WA/HT-6) (A) **Mr 93**
- Natural Convection between Spheres and Cylinders (79-HT-111) (A) **N 108**
- Natural Convection from Vertical Plates with Semicircular Leading Edges (79-HT-104) (A) **N 108**
- Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**
- Nucleate Boiling Performance of Refrigerants and Refrigerant-Oil Mixtures (79-HT-79) (A) **N 105**
- Numerical Computation of Turbulent Flow Structure in a Cyclone Chamber (79-HT-31) (A) **O 94**
- Numerical Investigation of Electric Field Effects on Unsteady Buoyant Molten Glass Flows (79-HT-98) (A) **N 107**
- A Numerical Investigation of Thermal Convection in a Heat-Generating Fluid Layer (79-HT-103) (A) **N 108**
- Numerical Simulation of Dual-Media Thermal Energy Storage Systems (79-HT-35) (A) **O 94**
- A Numerical Solution Method for the Prediction of Flow and Terminal Distribution in Shell-and-Tube Heat Exchangers (79-HT-63) (A) **N 103**
- Numerical Solution of Three-Dimensional Natural Convection by the Strongly Implicit Procedure (78-WA/HT-10) (A) **Mr 93**
- Numerical Solution of Two-Dimensional Natural Convection in Enclosed Spaces (78-WA/HT-11) (A) **Mr 93**
- Onset of Convection in Fluid Layers with Nonuniform Volumetric Energy Sources (79-HT-100) (A) **N 107**
- Open Loop Thermosyphons with Geological Applications (79-HT-64) (A) **N 104**
- Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**
- A Parametric Study of a Direct Contact Heat Exchanger (78-WA/HT-16) (A) **Mr 94**
- Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**
- Performance of Solar Assisted Heat Pump Heating Systems for Residential Use (79-HT-12) (A) **N 102**
- Physical Modeling of Electric Glass Melting Furnaces for High Level Waste Immobilization (79-HT-97) (A) **N 106**
- Post-Scram LMFBR Heat Transport System Dynamics (79-HT-8) (A) **O 92**
- A Prediction of the Minimum Film Boiling Conditions for Spherical and Horizontal Flat Plate Heaters (79-HT-45) (A) **N 102**
- A Quadratic Finite Element for the Three-Dimensional Convective-Transport Equation (79-HT-50) (A) **N 103**
- Radiant Energy Transport in Porous Media (79-HT-1) (A) **O 92**
- Radiation Heat Transfer (CB) **Je 100**
- Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Je 101**
- Radiative Transfer through an Isotropically Scattering Finite Medium with Reflecting Boundaries (79-HT-29) (A) **O 93**
- Reactor Vessel Blowdown: Determination of Emergency Core Cooling Parameters (79-HT-83) (A) **N 105**
- Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems (78-WA/HT-63) (A) **Ap 93**



Resonance in the Ranque-Hilsch Vortex Tube (79-HT-16) (A) **O 93**

Response Characteristics of Optical Probes (78-WA/HT-3) (A) **Mr 92**

Review of Waste Heat Rejection from Geothermal Power Plants (79-HT-15) (A) **O 92**

The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**

The Role of Radiation in Pressure Modeling of Upward Fire Spread (79-HT-28) (A) **O 94**

Rotary Bed Solid Desiccant Drying: An Analytical and Experimental Investigation (79-HT-19) (A) **O 93**

The Segmented Oxidizing Monolith Catalytic Converter-Theory and Performance (79-HT-55) (A) **N 103**

Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFB Subassembly (78-WA/HT-26) (A) **Ap 91**

Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products (78-WA/HT-54) (A) **Mr 97**

Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

On the Sizing of Pressure Relief Valves for Pressure Vessels which are Used in the Transport of Liquefied Gases (78-WA/HT-39) (A) **Mr 96**

Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**

Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region (78-WA/HT-37) (A) **Mr 96**

Spectral Effects on Direct-Irradiation Absorbance of Five Collector Coatings (79-HT-18) (A) **O 93**

Spectral Emissivity of Ceramics at High Temperatures: Silicon Carbide and Silicon Nitride (79-HT-24) (A) **O 93**

Spectral Methods for Transient Heat Conduction Problems in Simple Geometries (79-HT-61) (A) **N 104**

A Stability Criterion for the Occurrence of Thermally Induced Oscillations in Steady Laminar Flow (79-HT-74) (A) **N 105**

Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling (79-HT-60) (A) **N 104**

Steady Thermal Convection from a Concentrated Source in a Porous Medium (79-HT-69) (A) **N 104**

Studying the Convective Heat Transfer from a Building Model with Infrared Camera Techniques (78-WA/HT-58) (A) **Mr 97**

Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 96**

Temperature Profiles in Combustion Gases by Inversion: Review and Approach (79-HT-21) (A) **O 93**

Temperatures of EBS-11 Subassemblies in Air or Argon without Forced Cooling (79-HT-7) (A) **O 91**

Testing of the CRBRP Direct Heat Removal Service in a 1/21 Scale Model (79-HT-5) (A) **O 91**

Theoretical Investigation of the Dynamic Characteristics of Heat Exchangers with Double Phase Change (79-HT-81) (A) **N 105**

Thermal Characteristics of Hydroponic Growing Beds (78-WA/HT-53) (A) **Ap 92**

Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**

Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**

Thermal Ignition Analysis in Boundary Layer Flows (78-WA/HT-47) (A) **Ap 92**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**

A Three-Dimensional Analysis for the Rewetting Process of Hot Channels (78-WA/HT-27) (A) **Mr 95**

Three-Dimensional Thermal Convection Produced by Two-Dimensional Thermal Forcing (79-HT-109) (A) **N 108**

Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) **Mr 94**

Total Temperature Probe Calibration in Supersonic Rarefied Flows (78-WA/HT-1) (A) **Mr 93**

Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**

Transient Response of a Latent Heat Storage Unit: An

Analytical and Experimental Investigation (79-HT-36) (A) **O 95**

Transition Boiling Heat Transfer in a Vertical Round Tube (79-HT-47) (A) **N 102**

Triangular Fin Performance by the Heat Balance Integral Method (78-WA/HT-50) (A) **Mr 96**

Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) (A) **O 94**

The Use of Heat Exchangers with Thermoexcel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**

The Use of Power Series Solutions in Radiation Heat Transfer and Thermal Network Analysis (79-HT-65) (A) **N 104**

Use of Vortex Diodes Applied to Post Accident Heat Removal Systems (79-HT-9) (A) **O 92**

Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**

Viscosity of Nitrogen Near the Critical Point (78-WA/HT-38) (A) **Ap 91**

Waste Heat Disposal to Air with Mechanical and Natural Draft—Some Analytical Design Considerations (78-WA/HT-17) (A) **Mr 94**

Wave Instability of Mixed Convection Flow on Inclined Surfaces (79-HT-105) (A) **N 107**

Wellhead Flow Predictions for Texas-Louisiana Geopressed Reservoirs (79-HT-70) (A) **N 104**

**Heat Transfer Analysis**

Test and Analysis of the ASALM-PTV Insulated Combustion Chamber (79-ENAS-21) (A) **O 88**

**Heat Transfer Calculations**

Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 98**

**Heat Transfer Coefficients**

Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Ji 102**

**Heat Transfer Gages**

Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 99**

**Heat Transfer Parameters**

Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Ji 101**

**Heat Treatment**

Effect of Heat Treatment on Elevated Temperature Fatigue-Crack Growth Behavior of Two Heats of Alloy 718 (78-WA/PVP-3) (A) **My 95**

**Heated Cones**

Asymmetric Boundary Layer on a Nonisothermally Heated Cone (79-HT-108) (A) **N 108**

**Heater System**

Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Ji 100**

Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Je 89**

**Heater Technology Transfer Program**

Aerospace Systems Analysis Approach to Energy Conservation in Heating, Ventilating and Air Conditioning Systems (79-ENAS-1) (A) **O 88**

Award-Winning Passive Solar House (BTR) **Je 47**

In Search of Optimum Fuel Savings (78-WA/Ener-1) (A) **Je 92**

Pre-Insulated Panel, U Factors, and Energy Use (BTR) **My 52**

Sensitization Kinetics in Type 304 Stainless Steel (79-PVP-85) (A) **S 99**

Snake River Exploration (ES) **My 21**

Solar Energy Index (NB) **S 71**

Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**

**Heath, B. B.** Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) (A) **Ap 89**

**Heating Demands**

Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PD-1) (A) **My 94**

**Heating Methods**

Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/TM-2) (A) **F 131**

**Heating System Design**

Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**

**Heating Systems**

Home Sweet Solar Home! (ES) **My 21**

An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 96**

Proposed Incentives Hinder Solar System Sales (NR) **S 70**

Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**

Solar Factors (C) **Ap 43**

Solar-Powered Pump (BTR) **O 43**

**Heating Value Ranges**

Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **Ji 102**

**Heavy Duty Turbines**

Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-198) (A) **Ji 104**

**Hecht, S. L.** Experience in the Use of FBR Core Component Structural Design Criteria as Applied FFTF (79-PVP-48) (A) **S 97**

**Heck, R. M.** Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ap 100**

Investigation of Process and System Design Variables for Catalytic Combustion of Low-Btu Gas (79-GT-66) (A) **Ap 99**

**Heckmann, S. R.** Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**

**Hendrick, J. K.** Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**

Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**

**Heikala, W. E.** Do Dogs Hear Earthquakes? (C) **Je 44**

**Hellenstein, H.** Development of Liquid Fuel System for Extended Operation of Industrial Gas Turbines (78-Pet-4) (A) **Je 97**

**Helical Springs**

Optimal Design of Helical Springs for Minimum Weight by Geometric Programming (78-WA/DE-1) (A) **Mr 84**

**Helical Torsion Springs**

Helical Torsion Spring Design **Ap 30**

**Helicopter Transmissions**

Developments in Gear Analysis and Test Techniques for Helicopter Drive Systems (79-DE-15) (A) **Ap 102**

**Helicopters**

Helicopter Environmental Control—Commercial and Military Solutions (79-ENAS-35) (A) **O 89**

Helicopter Position Stabilizing System (BTR) **My 55**

**Heliocentric Model**

Ockham's Razor and the Heliocentric Model (C) **S 50**

**Heliostats**

Design Considerations of Small Solar Collector Systems Using Plane Heliostats (79-Sol-2) (A) **Ap 92**

**Helium**

Bismuth Magnetoresistive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**

Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material—Solid Helium (78-WA/HT-12) (A) **Mr 94**

**Helium Pressure**

Experimental Assessment of the Effect of Helium Pressure on Heat Transfer in the GCFR Core During a Protected Loss of Flow Accident (79-HT-4) (A) **O 92**

**Helium Refrigeration Plants**

Cryogenic Plant for Fusion Research (IF) **Ji 55**

**Helium Turbines**

Conceptual Design of an 80,000-shp Fossil-Fired Closed-Cycle Helium Turbine Propulsion System for Naval Ship Applications (79-GT-94) (A) **Ap 99**

**Heiter, F. J.** Latest Engineering in Tank Car Design (78-WA/RT-11) (A) **My 93**

**Helm, H. E.** Ceramic Applications in Turbine Engines (79-GT-75) (A) **Ji 94**

**Hemdel, J. F. (author)** The Energy Center: New Alternative for Effective Energy Use (CB) **S 112**

**Hemstreet, J. M.** Laser Doppler Anemometry at the Inlet of a Vertical Extruder (79-Tex-9) (A) **D 100**

**Henderson, J. P.** Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**

**Henderson, R. E.** The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions (79-GT-93) (A) **Ap 99**

**Henderson, R. W.** Creative Confusion (C) **O 41**

**Hendricks, R. C.** Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region (78-WA/HT-37) (A) **Mr 96**

**Hendrickson, R. L.** Elections to Fellow Grade **Ji 88**



- Hendron, R. H.** Energy Extraction Operations: Some Preliminary Results (79-PVP-38) (A) **Ag 106**
- Hempel, M. F.** The Effect of Spring Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**
- Henry, D.** Reverse Plastic Flow Associated With Plastic Indentation (78-WA/Prod-19) (A) **My 100**
- Henry, E. M.** Mississippi County Community College Solar Photovoltaic Total Energy Project (79-Sol-13) (A) **Ag 94**
- Henry, R. E.** Bubble Growth During Decompression of a Liquid (79-HT-73) (A) **N 104**; Depressurization of Internally Heated Boiling Pools (79-HT-101) (A) **N 107**
- Hoppner, D. B.** Bosch: An Alternate CO<sub>2</sub> Reduction Technology (79-ENAs-32) (A) **O 89**; Development of the Electrochemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAs-33) (A) **O 89**
- Herald, M. J.** Analysis of Operating Rules in a Computerized Manufacturing System (78-WA/Prod-38) (A) **My 102**
- Herbst, R.** Transition Procedure of Stationary Boundary Layers (79-GT-128) (A) **Je 98**
- Herman, Arie** Experimental Investigation of Transient Asymmetric Heating in Vertical and Inclined Rectangular Enclosure (79-HT-90) (A) **N 106**
- Hermetic Refrigeration Compressor**  
Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**
- Herold, J. A.** Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Je 96**
- Heronemus, W. E.** Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**
- Herrmann, G.** On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) (A) **Je 96**
- Herrmann, R.** Automated Biomonitoring Applications to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Biosensing for Watershed Management (79-ENAs-41) (A) **O 89**
- Hert Machine**  
The Response of a Hert Machine to Impact Loading Using Finite Elements (79-DET-40) (A) **N 112**
- Hesje, R. C.** Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**
- Hesketh, H. E.** The Effect of the Hi-Vol Methodology on Air Quality Modeling (78-WA/APC-11) (A) **My 96**
- Heterogeneous Porous Formations**  
Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**
- Heterogeneous Mixtures**  
Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **Je 100**
- Heuristic Program**  
A New Heuristic for Improving the Efficiency of Numerically Controlled Punch Presses (78-DET-85) (A) **Ja 90**
- Hi-Vol Methodology**  
The Effect of the Hi-Vol Methodology on Air Quality Modeling (78-WA/APC-11) (A) **My 96**
- Hibbitt, H. D.** Analysis of Pipe Whip (79-PVP-122) (A) **S 104**
- Hickox, C. E.** Numerical Simulation of Dual-Media Thermal Energy Storage Systems (79-HT-35) (A) **O 94**; Steady Thermal Convection from a Concentrated Source in a Porous Medium (79-HT-69) (A) **N 104**
- Hicks, D. J.** Hot Tapping of Ethylene Pipelines (78-Pet-1) (A) **Je 97**
- High-Energy Phenomena**  
Spacecraft Finds Evidence of a "Closed" Universe (BTR) **My 51**
- High-Freezing Point Fuels**  
High-Freezing-Point Fuels Used for Aviation Turbine Engines (79-GT-141) (A) **Ag 100**
- High-Frequency Oscillations**  
An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) (A) **Ja 93**
- High-Pressure Compressors**  
Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **Je 95**
- High-Pressure System**  
High-Pressure Protective System Technology (79-ENAs-15) (A) **O 87**
- High-Speed Cropping**  
Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**
- High-Speed Fan Rotors**  
Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Je 96**
- High-Speed Flexible Rotor**  
Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Je 92**
- High-Speed Impact**  
The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**
- High-Speed Printers**  
Dynamically Optimum Design of Rope-Pulley Spacing Mechanism (79-DET-34) (A) **N 112**
- High-Speed Rolling Bearings**  
Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Je 95**
- High-Speed Wind Tunnel**  
Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Je 98**
- High-Temperature Applications**  
Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications (78-WA/GT-16) (A) **Ap 90**
- High-Temperature Fluids**  
The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Je 94**
- High-Temperature Process Heat Applications**  
Design of an HTGR for High-Temperature Process Heat Applications (79-JPGC-NE-2) (A) **D 96**
- High-Temperature Turbine**  
A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Je 102**
- High Transonic Compressors**  
Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **Je 100**
- High Velocity Jets**  
Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**
- Hight, T. K.** A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) (A) **Mr 91**
- Highway Hazards**  
Highway Hazards (NB) **O 80**
- Highway System**  
Automated Highway (BTR) **O 45**
- Highway Vehicle-Trailer Systems**  
Optimal Control Concepts for the Characterization and Design of Highway Vehicle-Trailer Systems (78-WA/DSC-27) (A) **Ap 96**
- Hilary Lee, W.** On the Optimal Tube Spacing For Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**
- Hilding, R. K.** A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**
- Hill, D. R. (translator)** The Book of Ingenious Devices (CB) **D 110**
- Hill, J. L.** Energy Tax Proposed (C) **My 46**
- Hill, R. W.** The LLL Underground Coal Gasification Project: 1978 Status (79-PVP-93) (A) **S 100**
- Hilton, L. J.** Thermal Design for the Infrared Astronomical Satellite (IRAS) Telescope System (79-ENAs-38) (A) **O 90**
- Hilton, P. D.** The Enriched Element for Finite Element Analysis of Three-Dimensional Elastic Crack Problems (79-PVP-88) (A) **S 100**
- Hindede, U.** SI Simplifies Life (C) **Ag 42**
- Hinkle, S.** Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System (78-DGP-5) (A) **Ja 88**
- Hirasawa, S.** The Use of Heat Exchangers with Thermocexel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**
- Hirata, M.** Experimental Investigation of Liquid Metal Turbulent Heat Transfer under Transverse Magnetic Field (79-HT-41) (A) **O 94**
- Hirayama, N.** Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Je 98**
- Hirs, G. G.** A New Method for Etching Surfaces of Bearings and Other Machine Elements (79-Lub-9) (A) **D 103**
- Hirschfeld, F.** Acoustic Flowmeters for Pipelines **O 28**; Alexander L. Holley, Builder of the Modern Steel Industry **D 22**; At the Beginning—The Founding of ASME **O 20**; The Black ME at Tuskegee Institute **My 38**; Codes, Standards and Certificate of Authorization Program—Part 1 - Establishing Safety Standards **Ja 33**; Part 2 - Policies, Programs and Organization **F 31**; Computer-Designed Gearing **Je 32**; Engineers' Salaries **My 22**; The Inventive Urge is Alive and Well **Mr 24**; Power Trains for Tractors **Ap 40**; A New Speed Reducer Design Technique **S 32**; Organizing ASME for the 1980s—A Proposed Scenario **S 46**; Our Glorious Past: An ASME Centennial Profile on Robert H. Thurston **N 34**; The Scroll Machine—An Old Principle With a New Twist **D 46**; A Winning Combination—Humanism and Enterprise **Ag 34**; The Year Ahead with President Zwiap **Je 22**
- Hishinuma, Y.** NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O in Gas Turbine Exhaust Gas (79-GT-69) (A) **Je 92**
- Hitomi, K.** Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**; Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Je 90**; Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**
- Hjelm, R. L.** Numerical Investigation of Electric Field Effects on Unsteady Buoyant Molten Glass Flows (79-HT-98) (A) **N 107**
- Ho, T. A.** Optimal Control Concepts for the Characterization and Design of Highway Vehicle-Trailer Systems (78-WA/DSC-27) (A) **Ap 96**
- Hoffman, M. A.** Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) **Mr 94**
- Hoffman, R. B.** Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAs-45) (A) **O 90**
- Holbrook, G. E.** Elections to Fellow Grade **Ag 89**
- Holcomb, R. S.** Development Progress on the Atmospheric Fluidized Bed Coal Combustor for Cogeneration Gas Turbine System for Industrial Cogeneration Plants (79-GT-104) (A) **Ag 99**
- Holdgate, M. W. (author)** A Perspective of Environmental Pollution (CB) **D 110**
- Hold-Time Sequence Effects**  
Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**
- Hole Length**  
Deep-Hole Worm-Pattern Drills (IF) **My 58**
- Hole Surfaces**  
A Study of Induction Hardening Hole Surfaces in Clearance Fit Joints to Improve Fatigue Strength (79-DE-10) (A) **Ag 102**
- Holes**  
The Film Cooling Effectiveness of Double Rows of Holes (79-GT/Isr-10) (A) **O 83**
- Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100****
- Measurement of the Elastic-Plastic Boundary Around Cold-worked Fasteners Holes (78-WA/APM-2) (A) **My 103****
- Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) (A) **Mr 90****
- Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104****
- Hollander, H. I.** Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Je 97**
- Holldorf, G. M.** Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Je 101**
- Hollenberg, J. W.** An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) (A) **My 94**
- Hollingsworth, L. M.** Subsea Chamber Design for the Dry Containment of Wellhead Equipment (78-Pet-43) (A) **F 125**
- Hollow Shafts**  
Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**
- Holmes, P. J.** Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) (A) **S 107**
- Holmes, R. E.** Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**
- Holocaust**  
On the Holocaust (C) **Ap 43**

- The Holocaust Defined (C) **Ja 46**
- Holster, J. Finite Element Analysis of Transient Natural Convection in Enclosed Spaces (79-HT-49) (A) **N 182**
- Holtz, M. Optimization of Two Stage Evaporators for Minimizing Rad-Waste Entrainment (79-DET-26) (A) **N 111**
- Holz, P. P. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**
- Holzer, J. C. Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**
- Home Air Conditioning**  
Solar-Powered Home Air Conditioning (BTR) **Ji 49**
- Home Electrical Systems**  
Home Electrical Generating System (EN) **My 67**
- Homicz, G. F. Three-Dimensional Lifting-Surface Theory for an Annular Blade Row (79-GT-182) (A) **Ji 183**
- Honigberg, C. A. The Holocaust Defined (C) **Ja 46**
- Homogeneous Mass Flow Rates**  
The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**
- Honor Award**  
An Award of Honor (ES) **S 21**
- Hoop Stresses**  
Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**
- Hooper, F. C. A Model for the Angular Distribution of Sky Radiance (79-HT-11) (A) **O 92**
- Hopkins, D. C. Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Ja 84**
- Hopkins, H. G. Elections to Fellow Grade **My 90**
- Hopkins, R. A. Design of a One-Year Lifetime, Spaceborne Superfluid Helium Dewar (79-ENAs-23) (A) **O 88**
- Hopkins, W. E. (recipient) James N. Landis Award **Ja CR-12**
- Horgan, C. O. Harmonic Waves in Layered Composites: New Bounds on Eigenfrequencies (78-WA/APM-23) (A) **My 105**
- Horizontal Channels**  
Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Ja 89**
- A Three-Dimensional Analysis for the Rewetting Process of Hot Channels (78-WA/HT-27) (A) **Mr 95**
- Horizontal Cylinders**  
An Analytical Study of Heat Transfer to a Horizontal Cylinder in a Large Particle Fluidized Bed (79-HT-78) (A) **N 105**
- Horizontal Flow**  
Combined Convective Heat Transfer From Vertical Cylinders in a Horizontal Flow (78-WA/HT-45) (A) **Mr 96**
- Horizontal Recirculation**  
On the Horizontal Recirculation in Water Bodies Due to Thermal Discharge (79-HT-84) (A) **N 106**
- Horizontal Slabs**  
Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 98**
- Horizontal Tubes**  
Local Heat Transfer Coefficients Around Horizontal Tubes in Fluidized Beds (79-HT-75) (A) **N 105**
- Hornback, M. R. Women: A Growing Force in Engineering (C) **D 52**
- Homer, M. W. Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Ji 93**
- Horton, T. L. O. Conceptual Design of an 80,000-shp Fossil-Fired Closed-Cycle Helium Turbine Propulsion System for Naval Ship Applications (79-GT-94) (A) **Ag 99**
- Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**
- Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Ja 94**
- Hosey, R. J. Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DBS-15) **Ap 95**
- Hosey, R. R. Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**
- Hoshi, T. Reverse Plastic Flow Associated With Plastic Indentation (78-WA/Prod-19) (A) **My 100**
- Hoshiya, S. An Investigation of the Early Detection of Defects in Ball Bearings by the Vibration Monitoring (79-DET-45) (A) **N 113**
- Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ji 98**
- Hoskins, E. R. In-Situ Measurement of the Mechanical Properties of Sea Ice (78-Pet-15) (A) **Ja 98**
- Hosni, Y. A. The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) (A) **My 95**
- Hot Air Turbine**  
Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Ji 96**
- Hot Dry Rock**  
The Federal Hot Dry Rock Geothermal Energy Development Program: An Overview (79-PVP-36) (A) **Ag 105**
- The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**
- Hot Exhaust Plume**  
Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **Ji 103**
- Hot Forging**  
Automatic Hot Forging for Parts Production (BTR) **N 66**
- Hot Forming**  
Statistical Analysis of the Influence of Process Variables on Noise Generation in Impact Hot Forming (79-DET-29) (A) **N 111**
- Hot Gas Cleanup Systems**  
Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**
- Hot Gas Recirculation**  
Augmented Vectored Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Ja 99**
- Hot-Stage Hardware**  
Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**
- Hot Tapping**  
Hot Tapping of Ethylene Pipelines (78-Pet-1) (A) **Ja 97**
- Hot Water Generator**  
The Shallow Solar Pond: An Alternative Process Hot Water Generator (79-Tex-8) (A) **D 106**
- Hot Wire**  
Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ji 98**
- Holckias, G. B. A Mobile Apparatus for Solar Collector Testing (79-DE-5) (A) **Ag 101**
- Spectral Effects on Direct-Insolation Absorbance of Five Collector Coatings (79-HT-18) (A) **O 93**
- Houghlon, J. R. Stock Spectrum Ratios Applied to the Comparison of Pulse Signatures (79-DET-8) (A) **N 106**
- House Construction**  
Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**
- Housing Exhibition**  
Underground Housing (NB) **D 75**
- Houtman, J. L. Structural Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-68) (A) **S 98**
- Hover, J. G. PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Ja 91**
- Hovercraft**  
Tulane Hovercraft (EN) **Ja 89**
- Howell, H. R. Orbital Service Module Thermal Control System Design (79-ENAs-22) (A) **O 88**
- Howell, R. H. Combined Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**
- Hrastar, J. A. Position Paper Found Wanting (C) **N 55**
- Hsaling-Goodman, C. D. A Comparative Assessment of the LMFBR and Advanced Converter Fuel Cycles (79-JPGC-NE-3) (A) **D 96**
- Hsu, C. T. Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 98**
- Hsu, I. C. Baseline Data on Film Coefficient for Heating Isobutane Inside a Tube at 4.14 MPa (600 psia) (79-HT-14) (A) **O 92**
- Hsu, T. C. Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Ja 90**
- Hsu, Y. K. Laminar Film Condensation Over a Vertical Circular Cylinder with Effect of Electrical Field (78-WA/HT-49) (A) **Mr 98**
- Huang, C. L. D. Effect of Thickness on Moisture Migration in Light-Weight Concrete Slabs (79-HT-2) (A) **O 92**
- Huang, F. Friction and Heat Transfer in Turbulent Free Swirling Flow in Pipes (79-HT-39) (A) **O 94**
- Huang, N. C. Finite Extension of an Elastic Strand With a Central Core (78-WA/APM-7) (A) **My 103**
- Huang, S. L. Cross Reinforcement in a GR/EP Laminate (78-WA/Aero-7) (A) **Ap 100**
- Huang, T. Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 98**
- Huang, T. C. Loads Moving on Beam Supported by Layered Elastic Foundation (79-DET-15) (A) **N 110**
- Hub Inlet**  
The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Ja 99**
- Hubbard, J. K. Application of Gas Turbine/Compressors in LNG Plants (79-GT-85) (A) **Ji 95**
- Hubbard, M. Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Ja 96**
- Lateral Dynamics and Stability of the Skateboard (79-APM-14) (A) **S 106**
- Huffington, N. J., Jr. The Response of a Long Cylinder to Lateral Air Blast Loading (79-DET-44) (A) **N 113**
- Hugget, B. M. Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **Ji 100**
- Hughes, A. D. Elections to Fellow Grade **Ag 89**
- Hughes, R. O. Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Ja 94**
- Hughes, W. F. Phase Change in Liquid Face Seals Romon II-Isothermal and Adiabatic Bounds With Real Fluids (79-Lub-4) (A) **D 102**
- Human Ankle**  
Relative Motion of the Tibia with Respect to the Foot During Internal-External Rotation of a Human Ankle (79-Bio-4) (A) **S 108**
- Human Ankle Joint**  
Internal-External Load-Displacement Characteristics of the In-Vitro Human Ankle Joint (79-Bio-3) (A) **S 108**
- Human Hip Joint**  
Artificial Leg With Natural Gait (BTR) **Ja 50**
- Human Knee**  
Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**
- Modeling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**
- Human Leg**  
A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) (A) **Mr 91**
- Human Mind**  
The Complexity of Mind: Magic, No, Mystery, Yes (BTR) **S 81**
- Human Spine**  
Technology Transfer in Biokinematics of Human Spine (78-DET-88) (A) **Ja 90**
- Human Wrist**  
Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**
- Humanism**  
The Need for Humanism in Engineering **Mr 69**
- Sharing the Dream (C) **N 55**
- A Winning Combination—Humanism and Enterprise **Ag 34**
- Hume, P. The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**
- Humidification System Development**  
Aircraft Humidification System Development (79-ENAs-8) (A) **O 87**
- Hundal, M. S. A Structure-Borne Velocity-Sensing Vibration Controller (79-DET-86) (A) **N 117**
- Hung, W. S. Y. Preliminary Design Analysis of a Catalytic Structure in a Turbine Combustor (78-WA/GT-10) (A) **Ap 89**
- Hunsberr, A. Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**
- Hunt, S. R. Food System Galley for Space Shuttle (79-ENAs-47) (A) **O 91**
- Hunt, S. R., Jr. Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAs-45) (A) **O 90**
- Hunter, R. P. (author) Automated Process Control Systems: Concepts and Hardware (CB) (A) **My 107**
- Hunter, S. C. Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) (A) **My 96**

**Hurd, R.** Augmented Vectored Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Je 99**

**Huse, H.** On Energy Invention Funding (C) **Ji 38**

**Huston, R. L.** Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**

**Hwang, B. C.** Performance of Solar Assisted Heat Pump Heating Systems for Residential Use (79-HT-12) (A) **N 102**

**Hwang, J. B.** Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Je 89**

**Hwang, N. H. C.** Investigation of a Pulsatile Flowfield Downstream from a Model Stenosis (78-WA/Bio-6) (A) **Mr 91**

**Hybrid Car**  
The Hybrid Car (ES) **Ji 20**

**Hybrid Computer**  
The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**

**Hybrid Finite Elements**  
Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**

**Hybrid Gas Turbines**  
Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Ji 91**

**Hybrid-Powered Vehicles**  
Hybrid-Powered Vehicles (BTR) **Mr 45**

**Hybrid Vehicles**  
Electric Vehicle Demonstration Project (BTR) **N 62**  
Expanding Horizons (ES) **S 20**

**Hydraulic Axial Thrust**  
Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

**Hydraulic Chambers**  
Development of a Hydraulic Chambered, Actively Controlled Boring Bar (78-WA/Prod-20) (A) **My 100**

**Hydraulic Components**  
Evaluation of Long-Term Aging Effects on Hydraulic Components and Systems (79-DET-104) (A) **D 105**  
A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**

**Hydraulic Copying System**  
Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **Mr 99**

**Hydraulic Coupling**  
Marine Reversing Gear Incorporating Single Reversing Hydraulic Coupling and Direct-Drive Clutch for Each Turbine (79-GT-61) (A) **Ag 98**

**Hydraulic Fracturing**  
Failure of Inclined Boreholes (78-DET-44) (A) **F 124**  
Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**  
A New Propellant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**  
A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**  
Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**

**Hydraulic Motors**  
Seawater Hydraulic System (BTR) **N 88**

**Hydraulic Operators**  
A New Rapid-Response Hydraulic Actuator-Design, Analysis and Test Results (79-DE-3) (A) **Ag 101**

**Hydraulic Positioning Bench**  
Hydraulic Positioning Bench (IF) **Ag 54**

**Hydraulic Power Stations**  
Hydro Plant Penstocks (IF) **N 74**

**Hydraulic Pressure**  
Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**

**Hydraulic Snubbers**  
Influence of Locking Velocity and Bleed Rate on Hydraulic Snubber Performance (79-PVP-39) (A) **Ag 106**

**Hydraulic Systems**  
FP-1—A Microcomputer Language for Controlling Hydraulic Systems (78-DE-W-1) (A) **F 128**

**Hydraulic Transmission**  
Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**

**Hydraulically Bulged Diaphragms**  
An Approximate Explicit Solution for Polar Strain of Hydraulically Bulged Circular Diaphragms (79-DET-111) (A) **D 106**

**Hydrazine Monopropellant Engine**  
Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**

**Hydrocarbon Production**  
Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**

**Hydrodynamic Effects**  
Hydrodynamic Effects in a Misaligned Radial Face Seal (78-Lub-12) (A) **Ja 94**

**Hydrodynamic Film Thickness**  
Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Ja 95**

**Hydrodynamic Forces**  
Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**

**Hydrodynamic Journal Bearing**  
Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) **Ja 93**

**Hydrodynamic Lubrication**  
Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Ji 95**  
Micropolarity-Roughness Interaction in Hydrodynamic Lubrication (79-Lub-8) (A) **D 102**

**Hydrodynamic Mass**  
Damping and Hydrodynamic Mass of a Cylinder in Simulated Two-Phase Flow (79-DET-81) (A) **D 104**

**Hydrodynamic Phenomena**  
Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**

**Hydrodynamically Lubricated Face Seals**  
Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**

**Hydroelectric**  
A Comeback for Hydroelectric (ES) **S 21**

**Hydroelectric Facilities**  
An Award for Acoustic Flowmeters (ES) **O 18**

**Hydroelectric Plants**  
Think Small! (ES) **My 20**

**Hydroelectric Power**  
Wind and Hydro (ES) **O 19**

**Hydroelectric Project**  
New Hydroelectric Project (IF) **Ap 50**

**Hydrogasification Process**  
Space-Age Coal Conversion (ES) **Je 18**

**Hydrogen**  
Cheap Hydrogen (ES) **Ji 21**  
Hydrogen as an Automotive Fuel (BTR) **Je 52; Ag 43**  
Hydrogen Energy Systems (ES) **N 32**

**Hydrogen Fuel**  
Solar Production of Hydrogen Fuel (BTR) **Ja 45**

**Hydrogen Powered Jets**  
Structural Integrity Specialists Gather in Washington, D.C. **Ji 80**

**Hydrolevel Appeal**  
Hydrolevel Update **Je 79**

**Hydrolevel Case**  
Council Votes to Appeal **My 82**

**Hydromechanical Drives**  
On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

**Hydrometallurgical Methods**  
Treatment of Molybdenite Ore Using a 2-kW Solar Furnace (79-Sol-22) (A) **Ag 94**

**Hydroponic Growing Beds**  
Renewable Energy Sources (C) **S 50**  
Thermal Characteristics of Hydroponic Growing Beds (78-WA/HT-53) (A) **Ap 92**

**Hydrostatic Foil Bearing**  
Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) (A) **Ja 95**

**Hydro-Thermal Drill Holes**  
Drillhole Stimulation in Iceland (78-Pet-24) (A) **Ja 98**

**Hydrothermal Loads**  
Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**

**Hyllon, L. D.** An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**

**Hyperhemispherical Viewports**  
Hyperhemispherical Viewports for Undersea Application (78-WA/OCE-2) (A) **F 130**

**Hypersonic Aircraft**  
Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**

**Hypersonic Wind Tunnels**  
Low Reynolds Number Effects on Sharp Cone Turbulent Heat Transfer Under Hypersonic Wind Tunnel Conditions (79-HT-89) (A) **N 106**

**Hyperthermia Research**  
Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) (A) **Mr 91**

**Ibanez, J. G.** The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

**Ibels, W. E.** Elections to Fellow Grade **S 94**

**Ibrahim, R. A.** Stationary Response of a Randomly Parametric Excited Nonlinear System (78-WA/APM-13) (A) **My 103**

**Ibrahim, Z. N.** Evaluation of the SRSS Combination of Primary Plus Secondary Dynamic Peak Responses (79-PVP-40) (A) **Ag 107**

**Ice Crystal Modification System**  
Frozen Coal (ES) **Ap 20**

**Ice Floe**  
Ice Floe Induced Structural Vibrations (78-Pet-21) (A) **Ja 98**

**Ice Source Heat Pumps**  
Ice Source Heat Pumps (ES) **Ji 21**

**Identification Method**  
A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 96**

**Ido, M.** Construction of Three-Workpiece Lapping Process (78-WA/Prod-7) (A) **Je 90**

**Ignition Analysis**  
Thermal Ignition Analysis in Boundary Layer Flows (78-WA/HT-47) (A) **Ap 92**

**Ignition Engines**  
The Five Bar Reciprocating System (79-DE-1) (A) **Ag 101**

**Ihrnen, M. H.** The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 89**

**Iino, T.** Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

**Image Analysis**  
Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Ja 93**

**Imam, I.** A New Rapid-Response Hydraulic Actuator-Design, Analysis and Test Results (79-DE-3) (A) **Ag 101**

**Imatake, T.** Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**

**Immersed Structures**  
A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**

**Immiscible Liquid**  
Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**

**Impact**  
The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**  
Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**

**Impact Bending**  
Elastic and Viscoplastic Impact Bending Response Analysis of Nuclear Shipping Cask Structures (79-PVP-43) (A) **Ag 107**

**Impact Damping**  
Application of Impact Damping to Rotary Printing Equipment (79-DET-82) (A) **N 116**

**Impact Energy Data**  
Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**



### Impact Hot Forming

Statistical Analysis of the Influence of Process Variables on Noise Generation in Impact Hot Forming (79-DET-29) (A) **N 111**

### Impact Loading

The Response of a Hert Machine to Impact Loading Using Finite Elements (79-DET-40) (A) **N 112**

### Impact Motion

Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) (A) **Ja 98**

### Impact Tests

Scale Model Impact Tests of Hazardous Material Container Designed to Section VIII, Division 1, of the ASME Code (79-PVP-42) (A) **Ag 106**

### Impellers

Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

### Impingement Region

Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

### Improvement Development

Measurement of Performance in an Engineering Environment (78-WA/Mgt-8) (A) **Je 91**

### In-Core Detection

In-Core Detection of Nuclear Fuel Assembly Vibration (79-DET-43) (A) **N 113**

### In-Field Method

An In-Field Method for the Determination of the Normal Plastic Anisotropy for Sheet Materials (78-WA/Prod-41) (A) **Je 90**

### In-Plane Forces

Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-16) (A) **N 110**

### In-Plane Vibration

In-Plane Vibration of Annular Disks Using Finite Elements (79-DET-100) (A) **D 105**

### In-Plant Energy Generation

Co-Generation of Steam and Electrical Energy for a Manufacturing Plant as Affected by Economy of Scale (78-IPC-Pwr-4) (A) **Ja 91**

### In-Service Inspection

In-Service Inspection (ISI)—The Role of the Third-Party Consultant **Ap 37**

Suggested Improvements in the Measurement of Pump Vibration for In-Service Inspection (78-WA/NE-5) (A) **Mr 88**

### In-Situ Measurement

In-Situ Measurement of the Mechanical Properties of Sea Ice (78-Pet-15) (A) **Ja 98**

### In-Situ Rock Salt

A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**

### In-Vessel Handling Machine

The Value of Prototype Testing in the Development of In-Vessel Handling Machine for FFTF (78-WA/NE-3) (A) **Mr 87**

Inagaki, T. Response Analysis of a General Asymmetric Rotor-Bearing System (79-DET-84) (A) **N 117**

### Incandescent Lighting

Energy-Saving Optics (BTR) **Mr 48**

### Incidence Angle

Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Ja 99**

### Incinerators

Municipal Incinerator an Environmental Success (BTR) **F 81**

### Inclined Boreholes

Failure of Inclined Boreholes (78-Pet-44) (A) **F 124**

### Inclined Surfaces

Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ag 92**

Wave Instability of Mixed Convection Flow on Inclined Surfaces (79-HT-105) (A) **N 107**

### Incompressible Turbulent Separating Flow

Prediction of Incompressible Turbulent Separating Flow (78-WA/FE-4) (A) **Je 89**

### Indirect-Transfer Heat Exchangers

Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) (A) **Ja 98**

### Induction Hardening

A Study of Induction Hardening Hole Surfaces in Clearance Fit Joints to Improve Fatigue Strength (79-DE-10) (A) **Ag 102**

### Industrial Applications

Industrial Application of a 66,000 lb/hr Vibrating Stoker Fired Boiler (78-IPC-Fu-4) (A) **Ja 91**

The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/FEM-2) (A) **My 94**

### Industrial Boiler Operator Experience

Evaluation of Industrial Boiler Operator Training Experience (79-IPC-Pwr-5) (A) **D 101**

### Industrial Boilers

A Boiler Without Water is . . . (78-Pet-19) (A) **Ja 98**

Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) (A) **My 96**

### Industrial Brake Drums

Thermal Stress Evaluation of Industrial Brake Drums Using Finite Element and Finite Difference Techniques (79-DE-20) (A) **Ag 103**

### Industrial Cogeneration

The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**

Evaluation of Alternative Steam Sources for Industrial Cogeneration (79-IPC-Pwr-2) (A) **D 101**

Industrial Cogeneration-Methods of Measuring and Improving Economic Merit (79-IPC-Pwr-1) (A) **D 106**

### Industrial Cogeneration Plants

Development Progress on the Atmospheric Fluidized Bed Coal Combustor for Cogeneration Gas Turbine System for Industrial Cogeneration Plants (79-GT-104) (A) **Ag 99**

### Industrial Combustion Applications

Applications of the Electro-Chemical Combustion Oxygen Analyzer (78-IPC-Pwr-3) (A) **Ja 91**

### Industrial Documentation

Industrial Documentation Handbook (CB) **N 118**

### Industrial Effluent Regulations

Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

### Industrial Emissions

Detergents Clean the Air (NB) **Ja 84**

### Industrial Energy Conservation

The Role of State Government in Industrial Energy Conservation (78-TS-7) (A) **F 130**

### Industrial Fuels

Energy from Coal in the Year 2000 (BTR) **S 52**

### Industrial Furnaces

Demonstration of Fuel Conservation in High Temperature Industrial Furnaces (78-WA/Enr-8) (A) **Je 92**

### Industrial Gas Turbine Regenerators

Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Ja 104**

### Industrial Gas Turbines

Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Ja 91**

Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-172) (A) **Ja 102**

Development of Liquid Fuel System for Extended Operation of Industrial Gas Turbines (78-Pet-4) (A) **Ja 97**

Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Ja 91**

Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Ja 96**

Mechanical Reliability Considerations in the Modern High Temperature Industrial Gas Turbine (79-GT-101) (A) **Ag 99**

Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ja 104**

### Industrial Growth

Steam Power and British Industrialization to 1860 (CB) **Ja 106**

### Industrial Hearing Conservation

Industrial Hearing Conservation (NB) **Ag 82**

### Industrial Operation

Landfill Methane: First U.S. Industry Use (BTR) **D 82**

### Industrial Plant Conversion

Conversion of Industrial Plants to Use Coal as Fuel (78-IPC-Fu-2) (A) **Ja 91**

### Industrial Plants

Building Confidence (ES) **S 21**

Conversion of Industrial Plants to Use Coal as Fuel **Ja 26**

Planning Industrial Plant Layouts (IF) **Ja 55**

### Industrial Power Conference

Applications of the Electro-Chemical Combustion Oxygen Analyzer (78-IPC-Pwr-3) (A) **Ja 91**

Application of Energy Conservation Methods to Industrial Refrigeration Systems (78-IPC-Pwr-5) (A) **Ja 91**

Application of Low-Btu Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**

Cogeneration—Some Hardware and System Design Parameters (78-IPC-Pwr-6) (A) **Ja 91**

Co-Generation of Steam and Electrical Energy for a Manufacturing Plant as Affected by Economy of Scale (78-IPC-Pwr-4) (A) **Ja 91**

Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**

### Industrial Powerhouses

Applications for Computers in Industrial Powerhouses (79-IPC-Pwr-6) (A) **D 101**

### Industrial Process Heat

Matching Solar Systems to Industrial Needs (79-Sol-28) (A) **Ag 95**

### Industrial Process Heating

In Search of Optimum Fuel Savings (78-WA/Enr-1) (A) **Je 92**

### Industrial Processes

Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) (A) **My 96**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ag 93**

### Industrial Refrigeration Systems

Application of Energy Conservation Methods to Industrial Refrigeration Systems (78-IPC-Pwr-5) (A) **Ja 91**

### Industrial Steam Generation

Application of Low-Btu Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**

### Industrial Technology

Technology, Planning, and Self-Reliant Development: A Latin American View (CB) **S 112**

### Industrial Waste Heat Recovery

Industrial and Institutional Waste Heat Recovery (CB) **Ja 104**

### Inelastic Analysis

Inelastic Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-25) (A) **Ag 106**

Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) (A) **Ag 104**

### Inelastic Bending

Inelastic Bending of Beams under Time-Varying Moments—A State Variable Approach (79-PVP-82) (A) **S 100**

### Inelastic Piping

Numerical Evaluation of an Inelastic Piping Elbow Element (79-PVP-41) (A) **Ag 106**

### Inertial Guidance

Optical Gyroscopes (BTR) **Ja 48**

### Inflation Impact

Pensions and Retirement—Are You Prepared? (NR) **Ja 84**

### Inflow Effects

Experimental Study of the Inflow Effects on a Natural Convection Heat Sink (78-WA/HT-30) (A) **Ag 92**

### Information Age

Age of Information (NB) **Ag 82**

### Information Exchange

Sharing Technology Information (IF) **Ja 54**

### Information Services

Applause Applause (C) **D 52**

### Infrared Camera Techniques

Studying the Convective Heat Transfer from a Building Model with Infrared Camera Techniques (78-WA/HT-58) (A) **Mr 97**

### Infrared Emission Spectroscopy

Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**

### Infrared Thermometer

Portable Infrared Thermometer (IF) **Ja 54**

Ingebo, R. D. Atomization of Water Jets and Sheets in Axial and Swirling Airflows (79-GT-170) (A) **Ja 102**

Ingham, D. B. Natural Convection between Spheres and Cylinders (79-HT-111) (A) **N 108**

Ingham, D. R. Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **Ja 100**

### Injection Molded Turbine Material

Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Ja 94**



### Injection Packer

Drillhole Stimulation in Iceland (78-Pet-24) (A) **Ja 98**

### Injection Process

Still Hope for Oil Shale (ES) **Ja 19**

### Injection Pump

Distributor Injection Pump, Type VE, Design and Examples for Application (78-DGP-7) (A) **Ja 87**

### Inlet Development Program

Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Ja 100**

### Inlet Flow Distortions

The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions (79-GT-93) (A) **Ag 99**

### Inlet Guide Vanes

Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ja 101**

Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Je 100**

### Inlet Mass Flow

An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Ja 91**

### Inlet Manifolds

Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**

### Inner Tubes

Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Ja 93**

### Innovation

Politicians and Engineers Debate U.S. Shortage of Innovation and Energy (NR) **Ag 56**

### Innovation Suppression

Innovation on the Skids (BTR) **Ja 47**

### Inorganic Sulfur

Sulfur Eaters (BTR) **S 57**

Inoue, J. On a New Type of Vibrating Lift (79-DET-23) (A) **N 111**

Inoue, M. Investigations of Transonic Turbine Cascade with High Stagger and Low Solidity (79-GT-25) (A) **Ja 100**

Inoue, S. Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Ja 90**

### Input Timing

Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (78-WA/DE-2) (A) **Mr 84**

### Input Transducer Dynamics

Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**

### Insect Control

Insect Control via Pathogenic Sex Lure (BTR) **Ja 43**

### Insect Swarms

Insects as UFO's (BTR) **F 56**

### Inspection System

Automatic Laser Inspection Machine (BTR) **My 50**

### Instabilities

Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**

The Effect of Applied Temperature Gradients on the Convective Instability of a Volumetrically Heated Porous Bed (79-HT-30) (A) **O 94**

Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**

Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**

### Instability Onset Speeds

Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) **N 115**

### Installation Priorities

Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **Ja 97**

### Instationary Boundary Layers

Transition Procedure of Instationary Boundary Layers (79-GT-128) (A) **Ja 98**

### Institutional Issues

Institutional Issues and Photovoltaics (ES) **S 20**

### Instrumentation Dynamics

Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**

### Instrumentation System

Acoustic Emission Measurement and Analysis System (BTR) **O 47**

### Insulated Attics

Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**

### Insulated Tiles

Exotic Tiles Solve Shuttle Reentry Problem (BTR) **My 48**

### Insulation

Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) (A) **Je 93**

### Insulation Value

Pre-Insulated Panel, U Factors, and Energy Use (BTR) **My 52**

### Insulation Measurement

Measurement of the Thermal Insulation Properties of Fabrics (79-Tex-3) (A) **D 99**

### Insurance Plans

ASME Members' Health Insurance Plans (PS) **Mr 70**

### Integral Methods

Triangular Fin Performance by the Heat Balance Integral Method (78-WA/HT-50) (A) **Mr 98**

### Integrated Gasification

Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Ja 92**

### Interaction Curves

Interaction Curves as a Tool in Optimization and Decision Making (79-DET-3) (A) **N 109**

### Interactive Computer Methods

Interactive Computer Methods for Design Optimization (78-DET-84) (A) **Ja 90**

### Interactive Method

A Man-Machine Interactive Method for the Development of Fatigue Design Equations (79-DET-96) (A) **D 104**

### Interactive Minicomputer

Small-Scale Design Optimization Using an Interactive Minicomputer (78-WA/DE-9) (A) **Mr 85**

### Interblade Phase Angle

Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Ja 99**

### Intercity Buses

Leaving the Driving to Us (ES) **D 20**

### Intercooled Engine

The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 89**

### Interface Cracks

A Closed Crack Tip Terminating at an Interface (78-WA/APM-26) (A) **Ja 93**

### Interfaces

Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**

### Interfacial Heat Transfer

The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**

### Interfacial Waves

Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Je 89**

### Interference Response Spectrum

Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) (A) **My 96**

### Interlaminar Crack Growth

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90**

### Intermittent Cross-Feed

Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**

### Intermittent Cutting

An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**

### Intermittent Cuts

Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 99**

### Internal Aerodynamics

Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Ja 93**

### Internal Combustion

Fuel Additives for Internal Combustion Engines: Recent Developments (CB) **Mr 98**

### Internal Combustion Engines

Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory (78-WA/Fu-1) (A) **Ja 96**

Computer Simulation and Verification of I.E. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 89**

Evaluation of Internal Combustion Engine Valve Trains by an

Empirically Tuned Simulation Model (78-DGP-9) (A) **Ja 87**

The Five Bar Reciprocating System (79-DE-1) (A) **Ag 101**

Piston Motion Influences, Measurements, Calculations (78-DGP-17) (A) **Ja 87**

### Internal Flow Tails

The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**

### Internal Heating

Depressurization of Internally Heated Boiling Pools (79-HT-101) (A) **N 107**

### Internal Fluid Flow

Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**

### Internal Pressure

Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) (A) **Ag 103**

Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**

Design of Radial Nozzles in Cylindrical Shells for Internal Pressure (79-PVP-14) (A) **Ag 104**

### Internal Resonance

Bifurcations in Dynamical Systems With Internal Resonance (78-WA/APM-12) (A) **My 104**

### Internal Suspension Springs

Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**

### Internally Pressurized Shells

Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**

### International Conference

Envtect '80 (IF) **D 66**

### International Fuel Service Center

Nuclear Fuel Service Center Approach to Reducing Proliferation Potential (78-WA/NE-9) (A) **Mr 88**

### International Marketing

International Marketing—Expensive! (BTR) **N 74**

### Interpolation Method

The Direct-Search Method in CNC Interpolators (78-WA/Prod-40) (A) **My 102**

### Intersection Shells

Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**

### Inventions

Invention Contentions (C) **Ja 44**

The Inventive Urge is Alive and Well **Mr 24**

Steamboats Come True: American Inventors in Action (CB) **N 119**

### Invention Funding

On Energy Invention Funding (C) **Ja 38**

### Inventors Expo

Basement Inventors Expo to Play L. A. (NB) **S 71**

### Inverse Heat Conduction

Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**

### Inverse Numerical Method

Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Ja 99**

### Inviscid-Viscous Interaction

Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Ja 98**

### Iron Fatigue

Generating Ductile Iron Fatigue Data with a Calibrated Tuning Fork System (79-DE-11) (A) **Ag 102**

### Iron Foil

Electrodeposition Process Makes Ultrathin Iron Foil (BTR) **N 70**

### Ironite Sponge Reaction

The Kinetics of Ironite Sponge H<sub>2</sub> Reactions (78-Pet-76) (A) **F 127**

Irregul, R. Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**

### Irradiated Core Components

Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**

### Irradiated Sludge

Irradiated Sludge as Cattle Feed (BTR) **S 55**

### Irradiation Effects

Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBR Pressure Vessels (79-PVP-59) (A) **S 98**

#### **Irradiation Pattern**

Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Ji 93**

#### **Irrigation Facility**

Design of a 150-kW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Je 95**

#### **Irregular Curves**

Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves (78-WA/RT-13) (A) **My 93**

Irrerier, H. Coupled Vibrations of Blades in Bending-Bending-Torsion and Disks and Out-of-Plane and In-Plane Motion (79-DET-90) (A) **D 104**

#### **Irrigation System**

Expand Sun-Powered Irrigation (BTR) **Ji 45**

Ishida, T. Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part 1 (79-GT-127) (A) **Ag 100**

Ishii, M. Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**

Ishikawa, H. Some Aspects of Seismic Risk Analysis of Underground Pipeline Systems (78-WA/PVP-6) (A) **My 95**

Iskander, S. K. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**

#### **Iso-Heat-Transfer-Rate Lines**

Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 99**

#### **Isokinetic Probe**

Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**

#### **Isolated Reverse Turbine Concept**

Feasibility of an Isolated Reverse Turbine Concept for Marine Propulsion (79-GT-63) (A) **Ji 93**

#### **Isolated Rotors**

The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions (79-GT-93) (A) **Ag 99**

#### **Isolation Systems**

Asismic Building Isolation Systems: Better Protection Against Earthquake Damage (79-PVP-54) (A) **S 96**

Toward the Rational Selection of Base Isolation Systems (79-PVP-53) (A) **S 97**

#### **Isostatic Presses**

Fatigue Strength Calculation of Prestressed Pressure Vessels for Isostatic Presses (79-PVP-117) (A) **S 104**

#### **Isothermal Effectiveness**

On the Film Cooling Effectiveness Controversy (79-GT-27) (A) **Ji 90**

#### **Isothermal Heat Flux**

Isothermal Heat Flux Sensor (78-WA/HT-14) (A) **Mr 94**

#### **Isothermal Surfaces**

Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100**

Ho, Y. An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**

Hsieh, T. Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part 1 (79-GT-127) (A) **Ag 100**

Iwamoto, T. Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

Iwan, W. D. Harmonic Analysis of Dynamic Systems with NonSymmetric Nonlinearities (78-WA/DSC-10) (A) **Ap 94**

Jackson, C. Design, Audit, Testing and Commissioning of Two 9000 HP Centrifugal Air Compressor Trains (78-Pet-46) (A) **F 125**

Jackson, K. L. High Adhesion Truck for Electric Locomotives (79-RT-7) (A) **Ag 97**

Jackson, P. E. Some Considerations on the Application of Chain Drives to Diesel Engines (78-DGP-4) (A) **Ja 86**

Jacobs, H. R. Heat Transfer in a Bottom Burning Oil Shale Retort (79-HT-3) (A) **O 92**; Heat Transfer to an

Evaporating Floating, N-Pentane Lens (79-HT-13) (A) **O 92**

Jacobs, W. S. Design of Radial Nozzles in Cylindrical Shells for Internal Pressure (79-PVP-14) (A) **Ag 104**

Jacobson, D. Heat Pipe Mirrors for High-Power Lasers **My 34**

Jaegers, H. First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Ji 94**

Jagow, R. B. Design and Development of a Trace Contaminant Removal Canister for SpaceLab (79-ENAS-16) (A) **O 87**

Jahn, A. Dynamic Propagation of Circumferential Cracks in Two Pipes with Large-Scale Yielding (79-PVP-81) (A) **S 99**

Jaisinghani, R. A. A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAS-26) (A) **O 89**

Jaluria, Y. On the Horizontal Recirculation in Water Bodies Due to Thermal Discharge (79-HT-84) (A) **N 106**

James, L. A. Effect of Heat Treatment on Elevated Temperature Fatigue-Crack Growth Behavior of Two Heats of Alloy 718 (78-WA/PVP-3) (A) **My 95**; The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-83) (A) **S 100**

James, O. R. Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Ji 101**

Janna, W. S. Economics of Wind Generated Power (78-Pet-80) (A) **F 128**

Jannrup, O. Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**; Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine (78-DGP-10) (A) **Ja 87**

Jarvinen, P. O. Novel Ceramic Receiver for Solar Brayton Systems (79-Sol-25) (A) **Ag 95**

Jay, R. L. The Time-Variant Aerodynamic Response of a Stator Row Including the Effects of Airfoil Camber (79-GT-110) (A) **Ag 99**

Jean-Francois, C. Modeling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**

Jeldres, R. On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**

Jenkins, P. E. Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**; Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver (78-WA/Sol-3) (A) **Je 94**

Jennings, B. H. (recipient) ASME Honorary Membership **Ja CR-12**

Jeselsch, F. S. More on Registration (C) **My 47**

Jesick, J. F. Resource Utilization and Design Aspects of the Heavy Water Reactor (78-WA/NE-7) (A) **Mr 88**

Jet Cutting Performance Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**

Jet Drilling Can Nozzle Design be Effectively Improved for Drilling Purposes (78-Pet-51) (A) **F 125**

Jet Engines Design of Air-Cooled Jet Engine Testing Facilities (79-GT/ter-5) (A) **O 82**

Fuel Additives for Internal Combustion Engines: Recent Developments (CB) **Mr 98**

Jet Exhaust Application of Viscous Analysis to the Design of Jet Exhaust Powered Lift Installations (79-GT/ter-15) (A) **O 84**

Jet Flow Heat Transfer to Plane Turbulent Wall Jet Discussion on the Reynolds Analogy Factor (79-HT-40) (A) **O 94**

Jet Flows Nonparallel Effects on the Stability of Jet Flows (78-WA/APM-16) (A) **My 104**

Jet Impingement Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 88**

Jet Pumps Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**

Efficiency and Amplification in Jet Pumps (78-WA/DSC-7) (A) **Ap 94**

Jets Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**

Fillet Size in a Liquid Jet (79-FE-1) (A) **O 84**

The Jet Makers: The Aerospace Industry from 1945 to 1972 (CB) **Je 104**

On the Onset of Breakup in Inviscid and Viscous Jets (79-APM-7) (A) **S 106**

Structural Integrity Specialists Gather in Washington, D.C. **Ji 80**

Water Pump Tests (IF) **My 59**

#### **Jeffison Device**

New Design Concepts in Safety of Tractor-Trailers (78-DET-83) (A) **Ja 90**

Jewett, C. W. Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) (A) **S 102**

Jezowski, L. A Method of Damping Synthesis From Substructure Tests (79-DET-11) (A) **N 109**

Jiomacac, Chris Design Considerations in the Coupling of Shaft-Disk Systems by Interference Fits (79-DE-6) (A) **Ag 101**

#### **Job Survey**

Degrees, Jobs, and Salaries Increased in 1978 (EN) **D 76**

Joensuu, A. W. Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**

#### **Joggers**

The Addicted Joggers (BTR) **Ag 50**

Jogi, P. N. Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**

Johncock, A. W. A Discussion of the TRI-SEN M-300 Electronic Governor and its Possible Impact on Energy (78-DGP-22) (A) **Ja 88**

Johnson, C. M. Marine Condenser Design Using Numerical Optimization (79-DET-98) (A) **D 105**

Johnson, E. R. Criteria and Associated Dynamic Elastic Plastic Analysis of Auxiliary Branch Piping for a Large LOCA (79-PVP-26) (A) **Ag 106**

Johnson, G. E. Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) (A) **Mr 84**

Johnson, I. Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **Ji 100**

Johnson, K. L. The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) (A) **Ja 94**

Johnson, M. W. The Development of Wake Flow in a Centrifugal Impeller (79-GT-152) (A) **Ji 99**

Johnson, P. E. Spectral Emissivity of Ceramics at High Temperatures: Silicon Carbide and Silicon Nitride (79-HT-24) (A) **O 93**

Johnson, P. G. Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**

Johnson, R. C. Resource Utilization and Design Aspects of the Spectral Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**

Johnson, T. R. Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**

#### **Joint Degree Program**

Joint Degree Program (EN) **Je 88**

#### **Joint Engineering Program**

Joint Engineering Program (EN) **S 73**

#### **Joints**

Analysis of Massless Elastic Chains with Servo Controlled Joints (78-WA/DSC-34) (A) **Ap 99**

Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**

Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**

Jones, A. Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**

Jones, A. H. Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 98**

Jones, D. P. Axisymmetric Finite Element Analysis of Plates Containing Penetrations Arranged in a Square Pattern with Experimental Qualification (79-PVP-79) (A) **S 100**; Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) (A) **Ag 108**

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**

Jones, O. C., Jr. Flow Dynamics of Volume-Heated Boiling Pools (79-HT-102) (A) **N 108**; Heat Removal

J

Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**; Response Characteristics of Optical Probes (78-WA/HT-3) (A) **Mr 92**

**Jones, R. A.** Hydrogen as an Automotive Fuel (C) **Ag 43**

**Jones, S. W.** Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Jl 100**

**Jones, T. V.** Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Jl 90; Ag 98**

**Jones, W. E.** Thermal Stress Evaluation of Industrial Brake Drums Using Finite Element and Finite Difference Techniques (79-DE-20) (A) **Ag 103**

**Joss, J. M.** Heat and Mass Transfer in Fixed Beds at Low Reynolds Numbers (79-HT-91) (A) **N 107**

**Joplin, J. L.** Considerations for the Purchase of Gas Gathering Compressors (78-Pet-20) (A) **Ja 98**

**Joslyn, H. D.** An Experimental Investigation of Film Cooling on a Turbine Rotor Blade (79-GT-32) (A) **Ag 97**

**Joule Heating**  
Directional Dependence and Non-Uniformity of Joule Heating in Natural Convection Experiments (79-HT-96) (A) **N 106**

**Journal Bearings**  
Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DE-56) (A) **N 115**

Gas-Lubricated Porous Bearings of Finite Length-Self-Acting Journal Bearings (78-Lub-30) (A) **Ja 96**

Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**

Stability and Transient Characteristics of Four Multilobe Journal Bearing Configurations (79-Lub-3) (A) **D 102**

**Juricic, D.** On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) (A) **Ja 96**

**Justice, N. A.** Practical "On-Engine" Microprocessor Control and Monitoring Systems for Gas Turbines (79-GT-181) (A) **Jl 103**

## K

**Kaji, H.** Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**

**Kalder, S.** On the Mechanism of Chip Breaking (78-WA/Prod-21) (A) **My 100**

**Kalinowski, A. J.** Pictorial Gool (C) **D 53**

**Kalinina, A.** Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) (A) **Ag 103**

**Kane, E. D.** Our "Do-Something" EPA (C) **Ap 43**

**Kane, T. R.** Elections to Fellow Grade **O 80**; A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**

**Kaneta, M.** Effects of Asperities in Elastohydrodynamic Lubrication (79-Lub-6) (A) **D 102**

**Kangovi, S.** Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Ja 88**

**Kanki, M.** Response Analysis of a General Asymmetric Rotor-Bearing System (79-DET-84) (A) **N 117**

**Kao, J. S.** Dynamic Reduction in Rotor Dynamics by the Finite Element Method (79-DET-70) (A) **N 116**

**Kao, T. T.** A Numerical Solution Method for the Prediction of Flow and Thermal Distribution in Shell-and-Tube Heat Exchangers (79-HT-63) (A) **N 103**

**Kao, Y. K.** Transition Boiling Heat Transfer in a Vertical Round Tube (79-DE-47) (A) **N 102**

**Karamchett, S. D. S. R.** Contact Problems in Wire Ropes (79-DE-2) (A) **Ag 101**

**Karel, M.** Food Technology in Space Habitats (79-ENAS-31) (A) **O 89**

**Karlsson, B. I.** Analysis of Pipe Whip (79-PVP-122) (A) **S 104**

**Karnopp, D. C.** Are Active Suspensions Really Necessary? (78-WA/DE-12) (A) **Mr 86**; Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**; Elections to Fellow Grade **My 90**

**Kasper, J. M.** Influence of Heat Release Distribution on the Acoustic Response of Long Burners (79-DET-31) (A) **N 112**

**Kasper, K. R.** Electronic Hardware and Its Impact on Numerical Control (78-WA/DSC-16) (A) **Ap 95**

**Kass, J. N.** Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) (A) **S 102**

**Kasten, R. E.** Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**

**Kathiresan, K.** Influences of Flaw Shapes on Stress Intensity Factors for Pressure Vessel Surface Flaws and Nozzle Corner Cracks (79-PVP-65) (A) **S 98**

**Kato, M.** NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Jl 92**

**Kato, S.** Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **Mr 99**

**Kaufman, A.** Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Ja 99**

**Kauzlarich, J. J.** Elections to Fellow Grade **Jl 88**; Total Temperature Probe Calibration in Supersonic Rarefied Flows (78-WA/HT-1) (A) **Mr 93**

**Kawabe, N.** Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**

**Keairns, D. L.** Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Jl 103**

**Keane, M. J.** Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

**Keer, L. M.** The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) (A) **S 108**

**Kehler, P.** Reactor Vessel Blowdown: Determination of Emergency Core Cooling Parameters (79-HT-83) (A) **N 105**

**Kelleher, M. D.** An Experimental Study of the Secondary Flow in a Curved Rectangular Channel (79-FE-6) (A) **O 85**

**Kellenberger, W.** Spiral Vibrations Due to the Seal Rings in Turbogenerators Thermally Induced Interaction Between Rotor and Stator (79-DET-61) (A) **N 115**

**Keller, J. E.** Amazing Laser (C) **Ap 44**

**Kelly, F. S.** A General Fatigue Evaluation Method (Elastic Stress or Plastic Strain with Constant or Varying Principal Direction) (79-PVP-77) (A) **S 99**

**Kelly, J. M.** Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**

**Kelly, R. E.** Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**; Three-Dimensional Thermal Convection Produced by Two-Dimensional Thermal Forcing (79-HT-109) (A) **N 108**

**Kelp**  
Experimental Cultivation of Giant Kelp in Oceanic Environments (79-Sc-30) (A) **Ag 95**

**Kemp, F. S.** Parameter Monitoring for Corrosion Control in Gas Turbines (79-JPGC-GT-1) (A) **D 98**

**Kendall, L. A.** Cost Optimization Models for Planned Replacement (79-DET-115) (A) **D 107**

**Kendall, R. M.** Catalytic Combustion for System Applications (79-HT-54) (A) **N 103**

**Kenna, E. J.** Industrial Application of a 66,000 lb/hr Vibrating Stoker Fired Boiler (78-IPC-Fu-4) (A) **Ja 91**

**Kennedy, J. C., Jr.** Moderately Large Amplitude Plate Vibration Modes (79-DET-17) (A) **N 110**

**Kennedy, L. A.** Heat and Mass Transfer in a Catalytic Combustor (79-HT-57) (A) **N 103**

**Kent, G. F.** Design of Elevated Temperature Piping for Advanced Nuclear Plants (79-NE-7) (A) **S 105**

**Keogh, G. P.** Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**

**Kern, E. C., Jr.** On Air Conditioning With Photovoltaics (79-Sc-26) (A) **Ag 95**

**Kessel, H.** Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Jl 95**

**Kesseiring, J. P.** Catalytic Combustion for Gas Turbine Applications (79-GT-188) (A) **Ag 100**; Catalytic Combustion for System Applications (79-HT-54) (A) **N 103**

**Kesten, A. S.** Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT/Br-12) (A) **O 83**

**Kettner, R. J.** The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Jl 91**

**Kettleborough, C. F.** Finite Element Analysis of Transient Natural Convection in Enclosed Spaces (79-HT-49) (A) **N 102**

**Keyser, G.** Power Characteristics of a Continuous Crystallization Latent Heat Recovery System (79-Sc-21) (A) **Ag 94**

**Keyway Design**  
A New Key and Keyway Design (78-WA/DE-7) (A) **Mr 85**

**Khall, I.** Viscous Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**

**Khall, E. E.** Numerical Computation of Turbulent Flow Structure in a Cyclone Chamber (79-HT-31) (A) **O 94**

**Khondani, S. M. H.** A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sc-9) (A) **Ja 95**

**Kheyrandish, K.** Design Considerations of Small Solar Collector Systems Using Plane Heliostats (79-Sc-2) (A) **Ag 92**

**Kichko, R. D.** Plastic Design of Ligaments (79-PVP-37) (A) **Ag 106**

**Kick Tolerance**  
Annular Geometry—Its Effect on Kick Tolerance (78-Pet-63) (A) **F 127**

**Kiefer, B. V.** The Enriched Element for Finite Element Analysis of Three-Dimensional Elastic Crack Problems (79-PVP-88) (A) **S 100**

**Kieffer, J. K.** Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Ja 97**

**Kikuchi, K.** Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

**Kim, R. H.** Environmental Assessments of Small Scale Fluid Bed Combustors (79-JPGC-Pwr-10) (A) **D 98**

**Kim, W.** Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Ja 89**

**Kime, W. R.** Elections to Fellow Grade **N 100**

**Kine-Frac**  
Kine-Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Ja 90**

**Kinematic Analysis**  
Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**

Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) (A) **Ja 90**

**Kinetic Energy**  
Relationships for Nozzle Performance Coefficients (79-GT-145) (A) **Jl 101**

**Kinetics**  
The Kinetics of Ironite Sponge H<sub>2</sub>S Reactions (78-Pet-76) (A) **F 127**

**King, A. I.** Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) (A) **Mr 91**

**King, D. L.** Elections to Fellow Grade **Jl 88**

**King, G.** Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**

**King, R. K.** A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**

**Kingsolver, J. B.** Diffuse-Specular Analysis of Axisymmetric Surfaces with Application to the Design of Parabolic Reflectors (79-HT-22) (A) **O 93**

**Kinney, C. A.** Closed Cycle Gas Turbines, An ECAS Update: Part 1 (79-GT-204) (A) **Ag 100**

**Kinoshita, C. M.** Laminar Wake Flame Heights (79-HT-68) (A) **N 104**

**Kinzel, G.** The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**

**Kircher, J. F.** Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory (78-WA/Fu-1) (A) **Ja 96**

**Kirsch, M.** Ozone-UV Treatment for Oily Wastewater Cleanup (79-ENAS-39) (A) **O 90**

**Kiser, J.** Soviet Technology: The Perception Gap **Ap 22**

**Kitamura, K. T.** Experimental Investigation of Liquid Metal Turbulent Heat Transfer under Transverse Magnetic Field (79-HT-41) (A) **O 94**

**Kites**  
The Trouble with Kites (C) **Ag 42**

**Kitto, J. B., Jr.** Effect of Contaminants on Critical Heat Flux at Low Pressures (79-HT-72) (A) **N 104**

**Kleemann, M.** First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Jl 94**

**Klieschulte, D. G.** Application of the Finite Element Method in the Development of Improved Railroad Car



- Wheel Design (78-WA/RT-5) (A) **My 93**
- Klein, R. E. A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 96**
- Klett, M. G. Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Ja 98**; Converting Coal to Liquid/Gaseous Fuels **Je 34**
- Kline, J. H. Elections to Fellow Grade **Ap 87**
- Klocke, D. E. Evaluation of Industrial Boiler Operator Training Experience (79-IPC-Pwr-5) (A) **D 101**
- Knapp, R. H. Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**
- Knaul, C. F. Parameter Monitoring for Corrosion Control in Gas Turbines (79-JPGC-GT-1) (A) **D 98**
- Knight, K. T. Engineering Ethics **N 38**
- Knock Adaptive Spark Timing Control  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**
- Knodel, J. R. In Search of Optimum Fuel Savings (78-WA/Ener-1) (A) **Je 92**
- Knoll, W. H. Gas Turbine Bucket Corrosion Protection Developments (79-GT-47) (A) **Ag 98**
- Kobayashi, A. S. Dynamic Propagation of Circumferential Cracks in Two Pipes with Large-Scale Yielding (79-PVP-81) (A) **S 99**
- Kocher, J. M. Air Consumption and Nitrogen Oxide Emissions of Charge Cooled Engines (78-DGP-12) (A) **Ja 87**
- Kodres, C. A. Heat Transfer to an Evaporating Floating, N-Pentane Lens (79-HT-13) (A) **O 92**
- Koenig, J. F. Temperatures of EBS-11 Subassemblies in Air or Argon without Forced Cooling (79-HT-7) (A) **O 91**
- Kotsky, M. G. Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.77-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Ji 91**
- Kot, K. D. Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) (A) **Mr 87**
- Kondic, N. Reactor Vessel Blowdown: Determination of Emergency Core Cooling Parameters (79-HT-83) (A) **N 105**; Rotation Units (C) **My 44**
- Kenold, W. G. (author) What Every Engineer Should Know About Patents (CB) **D 109**
- Konognicki, T. Y. The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**
- Kneel, P. Determination of the Reynolds-Stress Tensor with a Single Stanted Hot-Wire in Periodically Unsteady Turbulent Flow (79-GT-130) (A) **Ji 98**
- Koppelman Process  
Production of High Value Solid Fuels from Cellulosic Feed Materials by the Koppelman Process (79-Sol-33) (A) **Ag 98**
- Kopa, L. Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effects on Thermal Deformation (78-WA/Prod-31) (A) **My 101**; Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**
- Kordyban, E. Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Je 89**
- Korematsu, K. Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ji 98**
- Koren, Y. Design of Computer Control for Manufacturing Systems (78-WA/Prod-14) (A) **My 99**; The Direct-Search Method in CNC Interpolators (78-WA/Prod-40) (A) **My 102**
- Korkum, W. Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) (A) **Ap 99**
- Korta, K. J. Mechanical Reliability Considerations in the Modern High Temperature Industrial Gas Turbine (79-GT-101) (A) **Ag 99**
- Kosanchich, M., Sr. Inelastic Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-25) (A) **Ag 106**
- Kost, F. H. Shock Boundary Layer Interaction on High Turning Transonic Turbine Cascades (79-GT-37) (A) **Ag 98**
- Kost, G. An Introduction to Base Isolation (79-PVP-69) (A) **S 96**
- Kosuge, H. Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part 1 (79-GT-127) (A) **Ag 100**
- Kotter, J. I. Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) (A) **Ja 92**
- Kovacic, J. M. Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery Systems (78-Pet-3) (A) **Ja 97**
- Kovata, A. A Simple Solar Gas Turbine Plant (79-GT-90) (A) **Ji 95**
- Kowleski, S. M. Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**
- Koyanagi, E. T. Abrasion of WC-Co Alloys by Quartz (78-Lub-19) (A) **Ja 95**
- Kozin, F. The Stability of a Moving Elastic Strip Subjected to Random Parametric Excitation (79-APM-10) (A) **S 106**
- Kozluk, M. J. Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**
- Kraabel, J. S. Isothermal Heat Flux Sensor (78-WA/HT-14) (A) **Mr 94**
- Kraft, G. C. Steam Plant Operator Training (79-IPC-Pwr-4) (A) **D 101**
- Kraft Paper Mill  
Multivariable Identification of Some Paper Plant Parameters (78-WA/DSC-4) (A) **Ap 94**
- Kramer, J. M. Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) (A) **S 102**
- Kramer, S. N. Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (78-WA/DE-2) (A) **Mr 94**
- Kramer, T. J. Application of Ion-Drain Air Jets to Augment Airborne Equipment Cooling (79-ENAE-12) (A) **O 87**
- Krapp, R. Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Ji 93**
- Kraslj, M. Parameter Monitoring for Corrosion Control in Gas Turbines (79-JPGC-GT-1) (A) **D 98**
- Kraus, H. G. Development of Contiguity Element-Two-Dimensional Transient Nonlinear Heat Conduction (79-HT-58) (A) **N 103**
- Kraus, S. Design Considerations in Liquid Metal Fast Breeder Reactor Upper Internals Structures (79-PVP-34) (A) **Ag 106**
- Krause, H. H. Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**
- Krause, W. B. Heat Transfer Mechanisms Near Horizontal Heat Exchange Tubes in an Air Fluidized Bed of Uniformly Sized Glass Particles (79-HT-88) (A) **N 106**
- Kreid, D. K. Physical Modeling of Electric Glass Melting Furnaces for High Level Waste Immobilization (79-HT-97) (A) **N 106**
- Krempl, E. Construction of Nonlinear Monotonic Functions With Selectable or Linear Behavior (78-WA/APM-22) (A) **My 104**; Elections to Fellow Grade **N 108**
- Kretschmer, D. The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**
- Krey, G. Utilization of the Cold by LNG Vaporization with Closed-Cycle Gas Turbine (79-GT-84) (A) **Ag 98**
- Krihl, W. V. Catalytic Combustion for Gas Turbine Applications (79-GT-188) (A) **Ag 100**; Catalytic Combustion for System Applications (79-HT-54) (A) **N 103**
- Kring, G. Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAE-45) (A) **O 90**
- Krishna, M. V. Flow Through Non-Circular Annular Passages (79-FE-12) (A) **O 85**
- Kroboth, M. E. Power Plant Performance Model (79-JPGC-Pwr-4) (A) **D 97**
- Krodel, A. L. An Accelerated Durability Test Program for Diesel Truck Engines (78-LGP-23) (A) **Ja 88**
- Kropp, R. E. Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Ji 90**
- Krzyszowski, S. Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Ja 89**
- Kruger, P. Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**
- Kubo, S. On a New Type of Vibrating Lift (79-DET-23) (A) **N 111**
- Kudravez, B. S. Kiser Congratulated (C) **Je 45**
- Kuecken, J. A. (author) Starting and Managing Your Own Engineering Practice (CB) **My 107**
- Kuehn, T. J. Accelerating the Commercialization on New Technologies (78-WA/TS-4) (A) **Je 94**
- Kuhn, H. A. Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) (A) **Mr 89**
- Kulacki, F. A. A Numerical Investigation of Thermal Convection in a Heat-Generating Fluid Layer (79-HT-103) (A) **N 108**
- Kutak, R. F. Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) (A) **S 102**
- Kulle, V. Field Testing and Modifications of Pipeline Compression Equipment (79-GT-32) (A) **Ji 95**
- Kullgren, T. E. Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) (A) **Mr 90**
- Kumar, B. R. Nonlinear Response of Short Squeeze Film Dampers (79-Lub-24) (A) **D 103**
- Kumar, S. Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**
- Kumar, V. Influence of Locking Velocity and Bleed Rate on Hydraulic Snubber Performance (79-PVP-39) (A) **Ag 106**
- Kumaran, K. S. S. Finite Element Analysis of Mindlin Plates (78-WA/DE-6) (A) **Mr 85**
- Kuo, C. S. Design of Elevated Temperature Piping for Advanced Nuclear Plants (79-NE-7) (A) **S 105**
- Kuo, S. C. Conceptual Design of an 80,000-shp Fossil-Fired Closed-Cycle Helium Turbine Propulsion System for Naval Ship Applications (79-GT-94) (A) **Ag 99**; Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**; Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**
- Kurajan, G. M. On the Design of Ductile Elastic Annular Diaphragms (79-DET-109) (A) **D 106**
- Kurita, M. Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**
- Kuroomaru, M. Investigations of Transonic Turbine Cascade with High Stagger and Low Solidity (79-GT-25) (A) **Je 100**
- Kursted, H. A. Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**
- Kushner, F. Disc Vibration—Rotating Blade and Stationary Vane Interaction (79-DET-83) (A) **N 117**
- Kuwahara, H. The Use of Heat Exchangers with Thermocouples in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**
- Kwak, Y. K. Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**
- Kwon, Y. D. Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) (A) **Ja 92**

## L

- Laberge, C. A. The Effect of Corner Radius on Plate-Cylinder Intersections (79-PVP-15) (A) **Ag 104**
- Laboratory Data  
A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**
- Laboratory Evaluation  
Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Ji 100**
- Laboratory Testing  
Development of Deviation Control Tool (78-Pet-58) (A) **F 126**
- Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**
- Labus, T. L. Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 83**
- Labyrinth Seals  
A Fluid Mechanics Model to Estimate the Leakage of Incompressible Fluids through Labyrinth Seals (79-FE-4) (A) **O 85**
- Lacey, J. J. Overview of Coal Liquefaction in the U. S. Department of Energy (79-PVP-45) (A) **S 98**
- Lacey, P. D. Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-6) (A) **Je 93**
- LaFrance, L. J. Note on Comparison of Nonlinear Optimization Methods (79-DET-118) (A) **D 107**
- Lahey, J. P. Optimizing Storage Capacities Within a Coal



- Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**
- Lai, J. S.** Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**
- Lai, N. W.** Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**
- Laird, A. D. K.** Baseline Data on Film Coefficient for Heating Isothane Inside a Tube at 4.14 MPa (600 psia) (79-HT-14) (A) **O 92**; Geothermal Power and Water Production Studies at the University of California (78-WA/Ener-7) (A) **Je 93**
- Lakshminarayana, B.** Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**; Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Jl 104**
- Lane, P. C.** Formulation of Torsional Soil-Foundation Interaction of Building Structures (79-PVP-74) (A) **S 99**
- Lamb, G. E. R.** Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**; Electric Filtration (C) **Ja 40**
- Lamb, J. P.** Wellhead Flow Predictions for Texas-Louisiana Geopressured Reservoirs (79-HT-70) (A) **N 104**
- Lambda Matrices**  
Roots of Lambda Matrices (78-WA/APM-4) (A) **My 102**
- Lambert, G. A.** Simultaneous Melting and Freezing in the Impinging Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**
- Lamberti, E.** Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**
- Lambertz, J.** Blade-Row Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Jl 96**
- Laminar Film Condensation**  
Laminar Film Condensation Over a Vertical Circular Cylinder with Effect of Electrical Field (78-WA/HT-49) (A) **Mr 96**
- Laminar Flow**  
A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Je 89**  
A Stability Criterion for the Occurrence of Thermally Induced Oscillations in Steady Laminar Flow (79-HT-74) (A) **N 105**
- Laminar Free Convection**  
Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**
- Laminar Heat Transfer**  
Generalized Laminar Heat Transfer From the Surface of a Rotating Disk (78-WA/HT-29) (A) **Mr 95**  
Laminar Heat Transfer in Porous Ducts with Variable Suction (78-WA/HT-41) (A) **Mr 96**
- Laminated Composites**  
Simulation of the Influence of Bonding Material: on the Dynamic Behavior of Laminated Composites (78-WA/APM-15) (A) **My 104**
- Laminated Porous Walls**  
Evaluation of Laminated Porous Wall Materials for Combustor Liner Cooling (79-GT-100) (A) **Ag 99**
- Laminates**  
Cross Reinforcement in a GR/EP Laminate (78-WA/Aero-7) (A) **Ap 100**
- Lampard, D.** The Film Cooling Effectiveness of Double Rows of Holes (79-GT-17) (A) **O 83**; The Flow and Film Cooling Effectiveness Following Injection Through a Row of Holes (79-GT-17) (A) **O 82**
- Lancaster, J. K.** Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**
- Lance, R.** Inelastic Bending of Beams under Time-Varying Moments—A State Variable Approach (79-PVP-82) (A) **S 100**
- Lanchester Damper**  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) (A) **Mr 84**
- Land, P. L.** Fractography of Reaction-Sintered  $\text{Si}_3\text{N}_4$  (79-GT-97) (A) **Ag 99**
- Land Reclamation**  
Wheat from Old Tires (BTR) **Ap 49**
- Lane, A. D.** A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Jl 103**
- Lane, C. E.** Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**
- Lane, D. F.** Productivity (C) **Ap 42**
- Lang, K.-W.** Harmonic Waves in Layered Composites: New Bounds on Eigenfrequencies (78-WA/APM-23) (A) **My 105**
- Lang, R. P.** Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Jl 97**
- Langan, W. T.** Electrostatic Precipitator's Performance in Cycling Duty (79-JPGC-Pwr-6) (A) **D 98**
- Langsjoen, P. L.** Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) (A) **My 96**
- Lapedes, D. N. (editor)** McGraw-Hill Dictionary of Scientific and Technical Terms (CB) **Je 103**; (author) McGraw-Hill Dictionary of Physics and Mathematics (CB) **Ap 104**
- Lapping Process**  
Construction of Three-Workpiece Lapping Process (78-WA/Prod-7) (A) **Je 90**
- Larsen, D. C.** Fractography of Reaction-Sintered  $\text{Si}_3\text{N}_4$  (79-GT-97) (A) **Ag 99**; Screening Properties of Silicon-Based Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**
- Larsen-Basse, J.** Abrasion of WC-Co Alloys by Quartz (78-Lub-19) (A) **Ja 95**
- Larsson, L. O. K.** Fiber Reinforced Metals in Turbine Blades (79-GT-181) (A) **O 82**
- Laser Anemometers**  
Laser Anemometer Measurements in Turbulent Natural Convection over a Vertical Flat Surface (79-HT-106) (A) **N 108**
- Laser Beams**  
Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**  
Space Behaves as Einstein, Expected (BTR) **S 58**  
Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**
- Laser Doppler Anemometry**  
Laser Doppler Anemometry at the Inlet of a Vertical Elutriator (79-Tex-9) (A) **D 100**
- Laser Fluorescence Technique**  
Development of a Laser Fluorescence Technique For Measuring Piston Ring Oil Film Thickness (79-Lub-2) (A) **D 102**
- Laser Fluoresensing**  
Laser "Eye in Sky" to Fight Polluters (C) **N 60**
- Laser Fusion**  
Amazing Laser (C) **Ap 44**
- Laser-Particulate Control**  
Laser-Particulate Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Jl 102**
- Laser Technology**  
Patent Could Greatly Reduce Nuclear Fuel Costs (EN) **Ja 60**
- Laser Treatment**  
Laser Treatment for Glaucoma (IF) **N 75**
- Laser Velocimeter**  
Miniature Velocimeter (BTR) **Jl 50**
- Laser Welding**  
Computer-Controlled Laser Welding (BTR) **Ja 49**
- Lasers**  
Automated Inspection of Wire-Frame Assemblies (BTR) **Jl 43**  
Automatic Laser Inspection Machine (BTR) **My 50**  
Heat Pipe Mirrors for High-Power Lasers **My 34**  
Laser Experiments Achieve High Fuel Compression (BTR) **S 58**  
Lasers for Flaw Inspection of Valve Lifters (BTR) **D 63**  
Resonance in the Ranque-Hilsch Vortex Tube (79-HT-16) (A) **O 83**  
Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Jl 92**  
Laser Light Microprobe (BTR) **Ap 56**  
Laser Processing of Plastic Parts (79-DE-17) (A) **Ag 103**  
Plasma Laser Tunable Over Wide Frequency Range (BTR) **F 60**  
World's Largest Laser (BTR) **Ja 43**
- Latent Heat**  
Power Characteristics of a Continuous Crystallization Latent Heat Recovery System (79-Sol-21) (A) **Ag 94**
- Lateral Acceleration Response**  
Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**
- Lateral Dynamic Performance**  
Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**
- Lateral Loads**  
Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**  
Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**
- Lateral Parametric Excitation**  
Dynamic Stability of Pre-Twisted Blades under Lateral Parametric Excitation (79-DET-91) (A) **D 104**
- Lateral-Vertical Dynamics**  
Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**
- Latham, R. F.** The Classroom Design of a COGAS Plant by Naval Systems Engineering Students (79-GT-187) (A) **O 83**
- Lathan, J. E.** Elections to Fellow Grade **Mr 80**
- Latzko, D. G. H.** Post-Scram LMFBR Heat Transport System Dynamics (79-HT-8) (A) **O 92**
- Lauds, J. M.** Stability of Flow From a Nuclear Cavity (79-FE-5) (A) **O 85**
- Lauer, J. L.** Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**
- Lauter, H.** Distributor Injection Pump, Type VE, Design and Examples for Application (78-DGP-7) (A) **Ja 86**
- Launders, B. E.** Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) **Mr 94**
- Laure, P. A.** Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-16) (A) **N 110**
- Lauriat, T. B.** Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **Jl 97**
- Law, C. K.** Thermal Ignition Analysis in Boundary Layer Flows (78-WA/HT-47) (A) **Ap 92**
- Layered Composites**  
Harmonic Waves in Layered Composites: New Bounds on Eigenfrequencies (78-WA/APM-23) (A) **My 105**
- Layered Pressure Vessels**  
Thermal Transient Analysis in Layered Pressure Vessels (79-PVP-13) (A) **Ag 104**
- Laying Conditions**  
The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**
- Layout Planning**  
Planning Industrial Plant Layouts (IF) **Jl 55**
- LD-OB Process**  
LD-OB Process (IF) **D 67**
- Le Grives, E.** Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Jl 93**
- Leach, J. W.** Optimum Design of Spacecraft Radiators for Large Capacity or Long Duration Mission Applications (79-ENAS-10) (A) **O 87**
- Leader, M. E.** Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) **N 115**
- Leading Edges**  
Natural Convection from Vertical Plates with Semicircular Leading Edges (79-HT-104) (A) **N 108**
- Leaf Springs**  
ASME Case Problem—Design Defect in a Leaf Spring (78-WA/DE-18) (A) **Mr 86**
- Leak Detection System**  
Multimode Leak Detection System (78-Pet-53) (A) **F 125**
- Leak Prevention**  
Metallic Thermal Seal (BTR) **Jl 45**
- Leakage Flow**  
Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**
- Leatham, C. H., Jr.** Co-Generation of Steam and Electrical Energy for a Manufacturing Plant as Affected by Economy of Scale (78-IPC-Pwr-4) (A) **Ja 91**
- Lebeck, A. O.** A Mixed Friction Hydrostatic Face Seal Model With Phase Change (79-Lub-5) (A) **D 102**
- Lederer, J.** Matters of Judgment (C) **Je 44**
- Lee, D. M.** Toward the Rational Selection of Base Isolation Systems (79-PVP-53) (A) **S 97**
- Lee, E. I.** Heat Transfer in Air Enclosures of Aspect Ratio

- Less Than One (78-WA/HT-7) (A) **Mr 93**
- Lee, G. K.** Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) (A) **My 97**; Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Je 97**
- Lee, H.** An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 96**
- Lee, J. B.** A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **JI 103**
- Lee, J. W.** Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**
- Lee, M.** Fiber Migration and Characteristics in Open-End Spun Cotton-Rich Blended Yarn (79-Tex-7) (A) **D 100**
- Lee, Moo-Zung** Seismic Restraint Spacing: A Velocity Spectrum Method and Other Considerations (79-PVP-12) (A) **Ag 104**
- Lee, S. H. D.** Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **JI 100**
- Lee, Y.** Effect of Flow Channel Orientation on Rewetting Phenomenon (78-WA/HT-31) (A) **Mr 95**; Effect of Partial Flow Blockage on Rewetting of Vertical and Horizontal Circular Ducts (79-HT-44) (A) **O 95**; A Three-Dimensional Analysis for the Rewetting Process of Hot Channels (78-WA/HT-27) (A) **Mr 95**
- LeFebvre, A. H.** Weak Extinction Limits of Turbulent Helio-energetic Fuel/Air Mixtures (79-GT-157) (A) **JI 100**
- Lefferts, R. (author)** Getting a Grant: How to Write Successful Grant Proposals (CB) **Ag 108**
- Legal Decision**  
Bloody But Unbowed: A Close Look at the Hydrolevel Case (Ed) **Ap 17**
- LeGette, J. A.** Erection Tolerances for Power Piping Systems (79-PVP-21) (A) **Ag 105**
- Legislation**  
ASME Public Affairs Program at the State Level **My 73**  
Energy-Conserving Cogeneration-Performance, Economics and Legislation (78-WA/Enr-5) (A) **Je 92**  
Energy Panel Calls for Consistent Government Energy Policies (NR) **My 64**  
Energy Tax Proposed (C) **My 48**  
Innovation on the Skids (BTR) **JI 47**  
Solar Incentive from National Energy Act (BTR) **Ap 55**  
Uneven Progress for Women and Minorities (NB) **Ja 59**
- Legislative Agenda**  
Scanning the Legislative Agenda (WW) **O 66**
- Leinhoff, T. F.** Calculation of the Geometric Factor Using the Plate Formula for Forged Bevel Gears with a Back Shoulder (79-DE-14) (A) **Ag 102**; Development of a Design Procedure for Forged Bevel Gears with a Web (79-DE-13) (A) **Ag 102**; Fatigue Life for Small Gear Boxes (79-DET-49) (A) **N 114**; Four Square Gear Box Testing (79-DET-48) (A) **N 114**; Optimum Oil Level for Small Gear Boxes (79-DET-50) (A) **N 113**
- Lehrfeld, K.** The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Enr-4) (A) **Je 92**
- Lelaj, H.** Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Ja 98**
- Letard, S. C.** Elections to Fellow Grade **My 90**
- Letmay, I.** Alternative Energy Sources and the Developing Nations (78-WA/TS-3) (A) **Je 94**
- Letz, R.** An Experimental Study of Transition and Turbulent Natural Convection in a Vertical Open-Ended Tube (79-HT-37) (A) **O 95**
- Lenz, E.** On the Mechanism of Chip Breaking (78-WA/Prod-21) (A) **My 100**
- Leon, A.** Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **JI 104**
- Leon, G. B.** "Close Headway" Operation for Bay Area Rapid Transit (BART) (79-RT-6) (A) **Ag 97**
- Leonard, R. L.** Air Policy Analysis for the Development of Western Energy Resources (78-TS-4) (A) **F 129**
- Lew, L. E.** Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products (78-WA/HT-54) (A) **Mr 97**
- Lelan, R.** A Parametric Study of a Direct Contact Heat Exchanger (78-WA/HT-16) (A) **Mr 94**
- Letson, K. N.** Influence of Fiber Loading on Thermal Ablation of PTFE (79-ENAs-3) (A) **O 86**
- Letton, G. C., Jr.** Thermal Control Systems for Pod-Mounted Avionics (79-ENAs-2) (A) **O 86**
- Leung, R. K.** Combined Convective Heat Transfer from Vertical Cylinders in a Horizontal Flow (78-WA/HT-45) (A) **Mr 96**
- Levesque, C. R.** The Design Audit Concept in New Product Development (78-DE-W-2) (A) **F 128**
- Levi, R.** Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**
- Levin, M.** Safety Standards in the USSR (C) **S 50**
- Levine, D. I.** Cooling a Radioscope Power Source in the Space Shuttle Orbiter (79-ENAs-44) (A) **O 90**
- Levinger, R.** Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/Prod-26) (A) **My 100**
- Levinson, D. A.** A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**
- Lew, H. G.** Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ag 100**
- Lewett, G. P.** On Energy Invention Funding (C) **JI 38**
- Lewis, O. L.** ASME in Public Affairs—Federal and State (Ed) **F 23**; As the President Has Seen It (Ed) **Je 17**; Bloody But Unbowed: A Close Look at the Hydrolevel Case (Ed) **Ap 17**; Corporate Support of ASME (Ed) **My 19**; International Affairs (Ed) **Ja 17**; What is Engineering? Who is an Engineer? (Ed) **Mr 23**
- Lewis, W. J.** Augmented Vectors Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Je 99**
- Li, D. F.** Stability and Transient Characteristics of Four Multilobe Journal Bearing Configurations (79-Lub-3) (A) **D 102**
- Liburdy, J. A.** A Stability Criterion for the Occurrence of Thermally Induced Oscillations in Steady Laminar Flow (79-HT-74) (A) **N 105**
- Life-Cycle Costs**  
The "Second Generation" LM2500—An Example of High Level of Reliability/Availability with Low Life-Cycle Costs (79-GT-79) (A) **Ag 98**
- Life Prediction System**  
Development of an Automated Life Prediction System for Steam Turbine Rotors (78-WA/DE-15) (A) **Mr 86**
- Life Support Systems**  
Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**  
Development of the Electro-Chemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAs-33) (A) **O 89**  
"Hard Hat" EVA, Personal Equipment to Support Large Scale Construction in Space (79-ENAs-43) (A) **O 90**  
Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **My 93**
- Lifeline Systems**  
Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**
- Lifting-Surface Theory**  
Three-Dimensional Lifting-Surface Theory for an Annular Blade Row (79-GT-182) (A) **JI 103**
- Ligament Efficiency**  
Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) (A) **Ag 106**
- Ligaments**  
Functional Characterization of Canine Anterior Cruciate Ligaments (79-Bio-1) (A) **S 108**  
Modelling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**  
Plastic Design of Ligaments (79-PVP-37) (A) **Ag 106**
- Light Beams**  
Plasma Laser Tunable Over Wide Frequency Range (BTR) **F 60**
- Light-Emitting Diodes**  
Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**
- Lighting System**  
"Smart Fixture" Uses Fiber Optics to Save Energy (BTR) **Ap 55**
- Lignite Ash**  
Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Je 97**
- Lignite Fired Power Plants**  
Coal or Lignite Handling Functions by Least Input Power (79-IPC/Fu-2) (A) **O 101**
- Liljeblad, J.** Fatigue Strength Calculation of Prestressed Pressure Vessels for Isostatic Presses (79-PVP-117) (A) **S 104**
- Limit Cycle of Seasons**  
It's a Long Long Time from May to December ... 60,000 Years (BTR) **N 57**
- Lind, G. W.** Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **JI 91**
- Lindahl, B. C.** The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**
- Lindbergh Letter**  
Lindbergh Letter: Unlimited Future or Annihilation—An Imminent Choice (BTR) **N 64**
- Lindblad, N. R.** Gas Turbine Bucket Corrosion Protection Developments (79-GT-47) (A) **Ag 98**
- Lindholm, U. S.** Elections to Fellow Grade **Ag 89**
- Line Break Controls**  
Electronic Line Break Controls for Gas Pipelines (78-Pet-52) (A) **F 126**
- Linear Acceleration**  
Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) (A) **Mr 91**
- Linear Behavior**  
Construction of Nonlinear Monotonic Functions With Selectable Intervals of Almost Constant or Linear Behavior (78-WA/APM-22) (A) **My 104**
- Linear Damping**  
Optimum Vibration Absorbers for Linear Damped Systems (78-WA/DE-22) (A) **Mr 86**
- Linear Differential-Difference Equation**  
Graphical Solutions for the Characteristic Roots of the First Order Linear Differential—Difference Equation (78-WA/DSC-31) (A) **Ap 96**
- Linear Stability**  
Analysis and interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 99**
- Linear Systems**  
Some Connections Between Modern and Classical Control Concepts (78-WA/DSC-20) (A) **Ap 96**
- Linear Vibration Disturbances**  
A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**
- Linear Wave Instability**  
Wave Instability of Mixed Convection Flow on Inclined Surfaces (79-HT-105) (A) **N 107**
- Linearizable Dynamic Systems**  
Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) (A) **Ap 99**
- Linearization**  
Harmonic Analysis of Dynamic Systems with Non-Symmetric Nonlinearities (78-WA/DSC-10) (A) **Ap 94**
- Linearized Analysis**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**
- Linearized Model**  
Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**
- Linehan, J. H.** Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**
- Ling, F. F.** Engineering as Part of Science (C) **F 55**
- Lingle, R.** Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 98**
- Linkages**  
The Analysis of an Elastic Four-Bar Linkage on a Vibrating Foundation Using a Variational Method (79-DET-64) (A) **N 114**  
Collapsible Module Extends Tenfold in Height (BTR) **F 60**  
Criteria of Force Transmission for Linkages and Their Application for Synthesis (79-DET-2) (A) **N 109**  
Critical Operating Speeds of Constrained Space Linkages Using Spatial Finite Line Element Method and Lumped Mass Systems (79-DET-37) (A) **N 112**
- Lipow, M.** Models for Software Reliability (78-WA/Aero-18) (A) **Ap 101**
- Liquefaction Process**  
Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Ja 98**
- Liquefied Gases**  
On the Sizing of Pressure Relief Valves for Pressure Vessels which are Used in the Transport of Liquefied Gases (78-WA/HT-39) (A) **Mr 96**
- Liquefied Natural Gas**  
Application of Gas Turbine/Compressors in LNG Plants (79-GT-85) (A) **JI 95**  
Utilization of the Cold by LNG Vaporization with Closed-

Cycle Gas Turbine (79-GT-54) (A) **Ag 88**

**Liquid-Coupled Indirect-Transfer Exchangers**  
Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) (A) **Ja 88**

**Liquid Droplet Heating**  
Liquid Droplet Heating and Vaporization in the Catalytic Combustor (79-HT-52) (A) **O 92**

**Liquid Face Seals**  
Phase Change in Liquid Face Seals Romon II-Isothermal and Adiabatic Bounds With Real Fluids (79-Lub-4) (A) **D 102**

**Liquid Films**  
The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 89**

**Liquid Fuel Drops**  
Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **Ji 100**

**Liquid Fuel System**  
Development of Liquid Fuel System for Extended Operation of Industrial Gas Turbines (78-Pet-4) (A) **Ja 97**

**Liquid Fuels**  
Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**

Coal Liquefaction R&D (BTR) **My 54**  
Converting Coal to Liquid/Gaseous Fuels **Ja 34**  
Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Ji 99**  
SRI President Sees Hope in Energy Crunch (NR) **My 60**

**Liquid Helium**  
Bismuth Magnetorestrictive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**

**Liquid Jet Impingement**  
Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 88**

**Liquid Jets**  
Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

**Liquid Metal**  
Experimental Investigation of Liquid Metal Turbulent Heat Transfer under Transverse Magnetic Field (79-HT-41) (A) **O 94**

**Liquid-Metal MHD Generator**  
The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**

**Liquid Metal Pumps**  
Liquid Metal Pumps (ES) **Ap 20**

**Liquid Natural Gas**  
The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**

**Liquid Phase Structure**  
Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Je 89**

**Liquid Piston Pumps**  
Review of Liquid Piston Pumps and Their Operation with Solar Energy (79-Sol-4) (A) **Ag 92**

**Liquid Propane**  
The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**

**Liquid Refrigerant**  
Home Heat and Hot Water from Ice (BTR) **Ap 46**

**Liquid Sealing**  
Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**

**Liquid Sodium**  
Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-S-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) (A) **S 102**  
The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-83) (A) **S 100**

**Liquid Surface**  
Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Je 39**

**Liquid Synthetic Fuels**  
Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 100**

**Liquid Tank Container**  
TankTainer—A Portable Bulk Liquid Tank Container for Intermodal Service (78-WA/RT-10) (A) **My 93**

**Liquid Transportation System**  
TankTrain®—A High Volume Bulk Liquid Transportation System (78-WA/RT-9) (A) **My 93**

**Liquids**  
Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**

**Lithium Metal**  
Lithium Metal for Fusion (ES) **Ji 21**

**Lithes, J. W.** Design and Development of a Trace Contaminant Removal Canister for Spacelab (79-ENAs-16) (A) **O 87**

**Litvin, F. L.** Criteria of Force Transmission for Linkages and Their Application for Synthesis (79-DET-2) (A) **N 109**

**Liu, H. C.** An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Ji 91**

**Livestock Waste Conversion**  
What To Do When You're Out of Hay (BTR) **Ap 54**

**Lloyd, J. R.** (recipient) Melville Medal **Ja CR-13**

**Load**  
Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 106**  
Distributor Injection Pump, Type VE, Design and Examples for Application (78-DGP-7) (A) **Ja 87**  
Dynamics of Rolling Element Bearing Part IV: Ball Bearing Results (78-Lub-33) (A) **Ja 96**  
Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Ja 95**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**  
A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**  
Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**  
Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**  
Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Ji 100**  
Loads Moving on Beam Supported by Layered Elastic Foundation (79-DET-15) (A) **N 110**  
Postbuckling Analysis of Continuous, Elastic Systems Under Multiple Loads—Part 1: Theory (79-APM-16) (A) **S 107**; Part 2: Applications (79-APM-17) (A) **S 107**  
A Simplified Approach to Creep Buckling of Structures Under Varying Loads (79-PVP-70) (A) **S 99**  
Static and Dynamic Analysis of Space Frameworks with Curved Members (79-PVP-97) (A) **S 101**  
A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) (A) **S 106**  
Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**  
Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**

**Load Carrying Capacity**  
Attempt to Provide a Unified Treatment of Tribology Through Load Carrying Capacity, Transport and Continuum Mechanics (79-Lub-18) (A) **D 103**

**Load Conditions**  
Piston Motion Influences, Measurements, Calculations (78-DGP-17) (A) **Ja 87**

**Load Response Analysis**  
Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**

**Loaded Cascades**  
Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Ji 96**; Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Ji 97**

**Loaded Flat Cars**  
Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves (78-WA/RT-13) (A) **My 93**

**Loading**  
An Approximate Analysis of Foundation Stresses in Horizontal Pressure Vessels (79-NE-1) (A) **S 104**  
Basis of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**  
A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) (A) **Ap 90**  
Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**  
External Hydrostatic Pressure Loading of Concrete Cylinder Shells (79-PVP-125) (A) **S 104**  
Investigation of Characteristic Damage States in Composite

Laminated (78-WA/Aero-4) (A) **Ap 100**

**Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading** (79-GT-202) (A) **Ji 104**

**Membrane Mode Solutions for Impulsively Loaded Circular Plates** (79-APM-1) (A) **S 105**

**On the Hardening Response in Small Deformation of Metals** (78-WA/AFM-17) (A) **My 104**

**Orthotropic Cylindrical Shells Under Dynamic Loading** (78-WA/DE-21) (A) **Mr 86**

**Performance Estimation of Partial Admission Turbines** (79-GT-123) (A) **Ji 98**

**A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service** (78-Pet-30) (A) **F 122**

**Three-Dimensional Lifting-Surface Theory for an Annular Blade Row** (79-GT-182) (A) **Ji 103**

**Loading Conditions**  
Behavior of Finite Journal Bearings Under Dynamic Loading Conditions (79-Lub-22) (A) **D 104**  
Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**

**Locheed, E. W., Jr.** Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Ja 97**

**Lock Design**  
Jimmy-Proof Auto Lock (BTR) **Ji 44**

**Lock Gate Drive**  
On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

**Locking Velocity**  
Influence of Locking Velocity and Bleed Rate on Hydraulic Snubber Performance (79-PVP-39) (A) **Ag 106**

**Lockhart, D. F.** Dynamic Buckling of a Damped Externally Pressurized Imperfect Cylindrical Shell (79-APM-21) (A) **S 107**

**Locomotive Dynamics**  
The Investigation of Locomotive Dynamics via a Large Degree of Freedom Modeling (79-RT-1) (A) **Ag 96**

**Locomotive Engine**  
Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **My 93**

**Locomotive Response**  
Locomotive Response to Random Track Surface Irregularities (78-WA/RT-12) **My 93**

**Locomotive Wheels**  
Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**

**Locomotives**  
Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives (78-DGP-15) (A) **Ja 87**  
High Adhesion Truck for Electric Locomotives (79-RT-7) (A) **Ag 97**  
Progress in Railway Mechanical Engineering—1977-1978 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**  
Railway Engineering Progress—Cars and Equipment **Ag 28**  
Survey Committee Report on Railway Engineering Progress—Locomotives **Ji 35**

**Loehcke, R. I.** Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**

**Loewenthal, S. H.** Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) (A) **Ja 96**

**Log Measurements**  
Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 98**

**Lohaus, K. L.** Compact Diesel Engines in Traction Applications (78-DGP-8) (A) **Ja 87**

**Lois, L.** High-Flying Ideas (C) **O 41**

**London, A. L.** Energy Recovery from Fracture-Simulated Geothermal Reservoirs (79-HT-92) (A) **N 107**

**Longitudinal Control**  
Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) (A) **Ag 94**

**Longitudinal Ductile Fractures**  
Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**

**Longo, F. N.** Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 89**

**Lopez, M., Jr.** Elections to Fellow Grade **O 80**

**Lord, P. R.** Twistless Yarns and Woven Fabrics Made Therefrom (79-Tex-4) (A) **D 99**

**Lord, J. A.** Three-Dimensional Lifting-Surface Theory for an Annular Blade Row (79-GT-182) (A) **Ji 103**



- Lorenz, J. J.** Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**
- Loroch, H. K.** Fatigue Strength of Silicon Nitride for High-Speed Rolling Bearings (79-GT-83) (A) **Jl 95**
- Loss, F. J.** Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant (79-PVP-62) (A) **S 98**; Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) (A) **Ag 106**
- Loss Coefficients**  
Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Je 94**
- Loss-of-Associated Accident**  
Criteria and Associated Dynamic Elastic Plastic Analysis of Auxiliary Branch Piping for a Large LOCA (79-PVP-26) (A) **Ag 106**  
Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**
- Lou, Y. K.** The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**
- Louis, J. F.** Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Jl 93**
- Love, W. J.** Dynamic Propagation of Circumferential Cracks in Two Pipes with Large-Scale Yielding (79-PVP-81) (A) **S 99**
- Lovajoy, S. W.** An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**
- Lovins, A. (author)** Non-Nuclear Futures: The Case for an Ethical Energy Strategy (CB) **N 118**
- Low, E. M.** The Train Operations Simulator (TOS)—A Tool for Railroad Accident Investigation (78-WA/RT-3) (A) **My 92**
- Low-Aspect-Ratio Turbine**  
An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Jl 91**
- Low Blowby**  
Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**
- Low-Btu Gas (LBG)**  
The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Jl 103**  
Heavy Duty Gas Turbine Design Changes for Use with Low Btu Gas (79-GT-198) (A) **Jl 104**  
Investigation of Process and System Design Variables for Catalytic Combustion of Low-Btu Gas (79-GT-66) (A) **Ag 98**
- Low-Btu Producer Gas**  
Application of Low-Btu Producer Gas to Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**
- Low-Cost Cooling System**  
Applying Plastics in a Highly Reliable, Low Cost Cooling System for Microelectronics (78-DE-W-3) (A) **F 129**
- Low-Cost Monitoring System**  
A Low-Cost, On-Site Performance Monitoring System (79-GT-21) (A) **Je 99**
- Low-Cycle Fatigue**  
Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**
- Low-Emission Combustor**  
Low-Emission Combustor (ES) **Ag 18**
- Low-Turbulent Wind Tunnel**  
Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Jl 98**
- Low-Velocity Projectile Impact**  
Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**
- Lowell, F. C., Jr.** Acoustic Flowmeters for Pipelines **O 28**
- Lowry, R. A.** Total Temperature Probe Calibration in Supersonic Rarefied Flows (78-WA/HT-1) (A) **Mr 93**
- Lubricant Behavior**  
Dynamics of Rolling Element Bearing Part IV: Ball Bearing Results (78-Lub-33) (A) **Ja 96**
- Lubricant Mechanical Transitions**  
Some Observations on the Relationship Between Lubricant Mechanical and Dielectric Transitions Under Pressure (78-Lub-16) (A) **D 103**
- Lubricants**  
Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**  
Lubricant Limiting Shear Stress Effect on EHD Film Thickness (79-Lub-12) (A) **D 103**  
Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Ja 94**
- Lubricated Extrusion**  
Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**
- Lubricated Face Seals**  
Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**
- Lubricating Oils**  
Reprocessing Waste Oil (ES) **Ap 21**
- Lubrication**  
Abrasion of WC-Co Alloys by Quartz (78-Lub-19) (A) **Ja 95**  
The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) (A) **Ja 93**  
An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) (A) **Ja 93**  
Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) (A) **Ja 95**  
Dynamics of Rolling-Element Bearings Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) (A) **Ja 95**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) **Ja 96**; Part III: Ball Bearing Analysis (78-Lub-32) (A) **Ja 96**; Part IV: Ball Bearing Results (78-Lub-33) (A) **Ja 96**  
Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Ja 95**  
Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) (A) **Ja 95**  
Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**  
Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus II—Slaved Conjunction (78-Lub-1) (A) **Ja 93**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**  
Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**  
Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) (A) **Ja 95**  
Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) (A) **Ja 96**  
A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**  
Gas-Lubricated Porous Bearings of Finite Lengths—Self-Acting Journal Bearings (78-Lub-30) (A) **Ja 96**  
Hydrodynamic Effects in a Misaligned Radial Face Seal (78-Lub-12) (A) **Ja 94**  
The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) (A) **Ja 94**  
Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) (A) **Ja 96**  
Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94**  
Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Ja 96**  
Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) (A) **Ja 95**  
Optical Analysis of Porous Metal Bearings (78-Lub-29) (A) **Ja 96**  
An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**  
Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**  
Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) (A) **Ja 94**  
A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) (A) **Ja 94**  
Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**  
Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Ja 94**  
Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Ja 95**  
Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**  
Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**
- Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) Ja 93**
- Lubrication Technology**  
Analysis of Dynamically Loaded Floating-Ring Bearings for Automotive Applications (79-Lub-14) (A) **D 103**  
An Analytical Solution for Thermal Behavior of the Step Thrust Bearing (79-Lub-19) (A) **D 104**  
An Attempt to Provide a Unified Treatment of Tribology Through Load Carrying Capacity, Transport and Continuum Mechanics (79-Lub-18) (A) **D 103**  
Behavior of Finite Journal Bearings Under Dynamic Loading Conditions (79-Lub-22) (A) **D 104**  
Development of a Laser Fluorescence Technique For Measuring Piston Ring Oil Film Thickness (79-Lub-2) (A) **D 102**  
Effects of Asperities in Elastohydrodynamic Lubrication (79-Lub-6) (A) **D 102**  
The Effect of Coning on Radial Forces in Misaligned Radial Face Seals (79-Lub-17) (A) **D 103**  
A Finite Length Bearing Correction Factor for Short Bearing Theory (79-Lub-13) (A) **D 103**  
A Generalized Short Bearing Theory (79-Lub-20) (A) **D 103**  
Lubricant Limiting Shear Stress Effect on EHD Film Thickness (79-Lub-12) (A) **D 103**  
Micropolarity—Roughness Interaction in Hydrodynamic Lubrication (79-Lub-8) (A) **D 102**  
A Mixed Friction Hydrostatic Face Seal Model With Phase Change (79-Lub-5) (A) **D 102**  
A New Method for Etching Surfaces of Bearings and Other Machine Elements (79-Lub-9) (A) **D 103**  
Nonlinear Response of Short Squeeze Film Dampers (79-Lub-24) (A) **D 103**  
Phase Change in Liquid Face Seals Remotely Isothermal and Adiabatic Bounds With Real Fluids (79-Lub-4) (A) **D 102**  
Relation Between Wear of Cr, Ni Steels and Debris Transport at High Temperature (950°C) (79-Lub-11) (A) **D 103**  
Some Observations on the Relationship Between Lubricant Mechanical and Dielectric Transitions Under Pressure (79-Lub-16) (A) **D 103**  
Spherical Bearings: Static and Dynamic Analysis Via the Finite Element Method (79-Lub-1) (A) **D 102**  
Squeeze Effects in Radial Face Seals (79-Lub-10) (A) **D 103**  
Stability and Transient Characteristics of Four Multilobe Journal Bearing Configurations (79-Lub-3) (A) **D 102**  
Stick-Slip Induced Noise Generation in Water-Lubricated Compliant Rubber Bearings (79-Lub-21) (A) **D 104**  
Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**
- Lucas, R. S.** Development of a Space Shuttle Plant Growth Unit (79-ENAs-19) (A) **O 88**; A Study of the Reduction of Carbon Dioxide in a Silent Electric Discharge (79-ENAs-13) (A) **O 87**
- Lucia, A. C.** Detection of Fatigue Crack Formation in Nozzle Welding of Pressure Vessels (79-PVP-101) (A) **S 102**; A New Computer Code for the Estimation of the Probability of Failure of PWR Pressure Vessels (79-PVP-118) (A) **S 103**
- Ludwig, G. R.** Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **Jl 103**
- Luebecke, E. H.** Physical Characterization of Particulate Material from a Turbine Engine (79-GT-179) (A) **Jl 102**
- Lug Load**  
Stresses in Elbows Created by Supporting Lug Load (79-PVP-51) (A) **S 97**
- Lui, S. W.** Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**
- Luidens, R. W.** An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Jl 91**
- Luisen, L. E.** Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-16) (A) **N 110**
- Luk, V. K.** An Approximate Analysis of Foundation Stresses in Horizontal Pressure Vessels (79-NE-1) (A) **S 104**
- Lumelsky, V. J.** Some Formulae for the Multiple and Partial Coherence Problem (79-DET-33) (A) **N 112**
- Lumped Mass Systems**  
Critical Operating Speeds of Constrained Space Linkages Using Spatial Finite Line Element Method and Lumped



- Mass Systems (79-DET-37) (A) **N 112**
- Lund, J. W. Sensitivity of the Critical Speeds of Rotor to Changes in the Design (79-DET-54) (A) **N 114**
- Lunde, P. A. Deepwater Production Risers (78-Pet-13) (A) **F 122**
- Luscher, J. Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) (A) **F 127**
- Luz, O. M. Bursting Experiment of a High Pressure Multiwall Test Vessel (79-PVP-96) (A) **S 101**
- Lynch, P. M. A Survey of Economic Analysis for Programmable Assembly (78-WA/DSC-17) (A) **Ap 95**
- Lyons, D. W. Contact Drying of a Sheet of Moist Fibrous Material (79-Tex-2) (A) **D 99**; Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Tex-1) (A) **Je 92**

## M

- Ma, B. M. Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBP Pressure Vessels (79-PVP-59) (A) **S 98**
- Mac Cready, P. B., Jr. (recipient) Spirit of St. Louis Medal **Ja CR-13**
- Maccallum, M. R. L. Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Je 99**; Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Jl 101**; Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-18) (A) **Je 99**
- Math, K. D. Improving Turbine Component Efficiency (79-GT-176) (A) **Jl 102**
- Machine Efficiency  
Efficient Machines Save Energy (NB) **Ap 85**
- Machine Elements  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) (A) **Mr 84**
- Machine Noise  
Noise Reduction on Textile Ring-Spinning Frames (79-DET-33) (A) **N 112**
- Machine Tool Parameters  
The Optimization of Machine Tool Parameters by Direct Measurement (79-DET-102) (A) **D 105**
- Machine Tool Structure  
Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**
- Machine Tools  
Dynamic Acceptance Test for Machine Tools Based on a Nonlinear Stochastic Model (79-DET-21) (A) **N 110**
- The Future of Numerical Controls **S 27**
- Machine Tools Look Health (NB) **D 75**
- Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**
- Machined Joints  
The Control of Structural Vibration by Frictional Damping in Electro-Discharge Machined Joints (79-DET-79) (A) **N 116**
- Machinery Design  
Active Magnetic Bearings (BTR) **F 58**
- Machinery Manufacturers  
Economic Issues Associated With Machinery and Its Manufacturers (79-DET-52) (A) **N 114**
- Machinery Vibration Signals  
Time Domain Analysis of Machinery Vibration Signals Using Digital Techniques (79-DET-13) (A) **N 110**
- Machining  
Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**
- The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**
- Machining Analysis  
Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**
- Machining Conditions  
Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**

- Machining Operations  
Higher Efficiency Transfer Line Machines (BTR) **Ja 43**
- Machining-Speed Decision  
Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**
- Machining Steels  
Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**
- Madhwal, A. N. Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**
- Madni, I. K. Dynamic Simulation of LMFBP Plant Under Natural Circulation (79-HT-6) (A) **O 91**
- Magazine Publication  
Graduating Engineer Magazine (EN) **S 72**
- Mages, R. A. Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**
- Magnet Bearings  
Active Magnetic Bearings (BTR) **F 58**
- Magnet Coils  
Another Step Toward Fusion (ES) **Ja 18**
- Magnetic Fields  
Cryogenic Plant for Fusion Research (IF) **Jl 55**
- Dating via Magnetic 'Fingerprints' in Ancient Pottery (BTR) **Je 54**
- Experimental Investigation of Liquid Metal Turbulent Heat Transfer under Transverse Magnetic Field (79-HT-41) (A) **O 94**
- Magnetic Heat Pump  
Magnetic Heat Pump (BTR) **Je 48**
- Magnetic Liquid Sealing  
Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**
- Magnetic Phonograph Cartridge  
A Simple Method for Monitoring and Measuring Low Level Vibrations (79-DET-41) (A) **N 112**
- Magnetohydrodynamic Generator  
The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**
- Magnetohydrodynamic System  
Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**
- Magnetohydrodynamics  
Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Jl 90**
- Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Jl 91**
- Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 84**
- Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 84**
- Gas Stream Composition and Temperature Determination in a Coal-Fired MHD Simulation Facility (78-WA/HT-23) (A) **Mr 84**
- MHD Generator Runs 500 Hours (NB) **Jl 65**
- MHD Subsystem (ES) **O 19**
- MHD Test Record (ES) **Jl 21**
- A Model of MHD Natural-Convection Heat Transfer from a Finite Cylinder (78-WA/HT-24) (A) **Mr 95**
- Magnetoresistive Thermometry  
Bismuth Magnetoresistive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**
- Mahan, J. R. Diffuse-Specular Analysis of Axisymmetric Surfaces with Application to the Design of Parabolic Reflectors (79-HT-22) (A) **O 93**; Influence of Heat Release Distribution on the Acoustic Response of Long Burners (79-DET-31) (A) **N 112**
- Mahig, J. Multivariable Identification of Some Paper Plant Parameters (78-WA/DSC-4) (A) **Ap 94**
- Mail Distribution  
Teleconferences, Electronic Mail in Future for Business (BTR) **Ap 50**
- Main Steam Piping  
Comparison of Steam Hammer Dynamic Testing with Analysis for Main Steam Piping (79-PVP-22) (A) **Ag 105**
- Maine, R. B. Development of a Space Shuttle Plant Growth Unit (79-ENAs-19) (A) **O 88**
- Mainstream Turbulence  
Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**

- Maintainability  
The "Second Generation" LM2500—An Example of High Level of Reliability/Availability with Low Life-Cycle Costs (79-GT-79) (A) **Ag 98**
- Maintenance Administration  
Productivity Factors in Large Plant Maintenance (78-WA/Mgt-5) (A) **Je 91**
- Maintenance Assessment  
Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) (A) **Mr 87**
- Maintenance Considerations  
Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Jl 97**
- Majumdar, S. Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**
- Malewski, W. F. Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Jl 101**
- Malik, M. A. K. Ph. Details (C) **O 48**
- Malkin, S. Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/Prod-26) (A) **My 100**
- Mallcott, F. L. Boiler Plant Accidents—Four Case Histories (78-Pet-46) (A) **F 125**
- Mallett, R. H. Numerical Evaluation of an Inelastic Piping Elbow Element (79-PVP-41) (A) **Ag 106**
- Management  
Advancement by Judgment (78-WA/Mgt-2) (A) **Je 90**
- Auditing an Engineering Organization (78-WA/Mgt-7) (A) **Je 91**
- Computer Technology Impact on Management (CB) **My 107**
- Employee Performance Appraisal (78-WA/Mgt-1) (A) **Je 90**
- The Engineer in Transition to Management (CB) **N 119**
- Improving Productivity Through Efficient Engineering Management **Je 27**
- Improving Productivity Through Engineering Administration (78-WA/Mgt-3) (A) **Je 91**
- The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**
- Management of Engineering Projects (CB) **F 134**
- Management of the Product Liability Engineer (78-WA/Mgt-4) (A) **Je 90**
- Measurement of Performance in an Engineering Environment (78-WA/Mgt-8) (A) **Je 91**
- PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Je 91**
- Management Degrees  
Productivity Factors in Large Plant Maintenance (78-WA/Mgt-5) (A) **Je 91**
- Energy Management Degree (EN) **Mr 85**
- Management Goal  
RGP-A Most Effective but Simple Reliability-Assurance Tool (79-DET-116) (A) **D 107**
- Management Guide  
Products Liability and the Reasonably Safe Product: A Guide for Management, Design, and Marketing (CB) **F 134**
- Management Policy  
Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**
- Management Sciences  
Energy Policy (CB) **Jl 106**
- Management Strategy  
Industry Calls for Cost Reduction through Better Design Engineering **Jl 76**
- Management System  
PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Je 91**
- Management Tool  
Auditing an Engineering Organization **S 22**
- Management Workshops  
Petroleum Division Plans Drilling and Management Workshops **Ag 82**
- Managerial Abilities  
Recognizing the Capable (C) **My 47**
- Managerial Success  
Skills Vital to Successful Managers (CB) **S 111**
- Mancini, T. R. Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Je 96**
- Manusso, R. A. Thermal Transient Analysis in Layered Pressure Vessels (79-PVP-13) (A) **Ag 104**
- Manung, E., Jr. Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) (A) **Mr 86**

## Manifold Center

Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**

## Manifolds

Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**

Mann, L., Jr. Productivity Factors in Large Plant Maintenance (78-WA/Mgt-5) (A) **Je 91**

Mann, J. W. A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Engr-3) (A) **Je 92**

Mann, R. M. Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**

## Manned Missions

Closed-Ecology Life Support Systems (CELSS) for Long-Duration, Manned Missions (79-ENAS-27) (A) **O 88**

## Manned Spacecraft Program

Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**

Manning, G. B. The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Je 91**

Manning, S. D. Surface Function Analysis Using a Desk-Top Calculator (79-DE-7) (A) **Ag 102**

Manos, W. P. Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Cars and Equipment (78-WA/RT-14) (A) **My 93**

## Manufacturing

Manufacturing—A New Image (C) **Ap 44**

## Manufacturing Engineering

Manufacturing Engineering at McMaster University (EN) **Ag 64**

## Manufacturing Engineers

Manufacturing Engineers in Heavy Demand (EN) **Mr 65**

## Manufacturing Environment

An Analysis of Some Production Planning Practices (78-WA/Prod-13) (A) **Mr 99**

## Manufacturing Processes

Fiber Optics Link Manufacturing Processes with Computers (BTR) **D 63**

## Manufacturing Programs

The Microprocessor: Key to Company Survival? (BTR) **Ja 44**

## Manufacturing Systems

Design of Computer Control for Manufacturing Systems (78-WA/Prod-14) (A) **My 99**

## Manufacturing Technology

The Impact of Manufacturing Technology on the Engineering Manager (79-DE-4) (A) **Ag 101**

Manney, E. H. Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 163**

Manzano, J. J. Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**

Marcal, P. V. Some Technical and Legal Considerations in Software Development (79-PVP-91) (A) **S 100**

Mardell, J. An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Je 94**

Mardesich, N. The Impact of Screen Printing on the Cost of Solar Cell Metallization (79-Sol-6) (A) **Ag 93**

Marduchow, M. Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) (A) **S 106**

Margolis, D. L. Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**

Marich, F. ASME Policy Perceptions (C) **F 54**

## Marine Condenser Design

Marine Condenser Design Using Numerical Optimization (79-DET-98) (A) **D 105**

## Marine Diesel Engine

Application of Sulzer 12ASV 25/630 Diesel Engines to M-K TE70-45 Locomotives (78-DGP-15) (A) **Ja 87**

## Marine Drilling Risers

A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**

## Marine Engineering Scholarships

Scholarships in Marine Engineering (EN) **Ja 90**

## Marine Mammals

Mammal Strandings: An Unsolved Mystery (BTR) **S 57**

## Marine Pipelines

The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**

## Marine Propulsion

A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-62) (A) **Je 92**

Feasibility of an Isolated Reverse Turbine Concept for Marine Propulsion (79-GT-63) (A) **Je 93**

## Marine Resources Program

LSU Wins National Sea Grant College Status (EN) **Ap 66**

## Marine Reversing Gearbox

Marine Reversing Gear Incorporating Single Reversing Hydraulic Coupling and Direct-Drive Clutch for Each Turbine (79-GT-61) (A) **Ag 98**

## Marine Riser Vibration Response

Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 98**

## Marine Riser Buoyancy

Operating Experience with Marine Riser Buoyancy (78-Pet-56) (A) **F 128**

## Marine Steam Turbine Plant

Fluidized Bed Combustion... A New Era in Ship Propulsion **Ja 30**

## Marine Turbines

Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Je 100**

Marinello, M. Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Ja 69**

Marinkovich, P. S. Testing of the CRBRP Heat Removal Service in a 1/21 Scale Model (79-HT-5) (A) **O 91**

Mark, R. Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**

## Marketable Crops

Wheat from Old Times (BTR) **Ap 49**

## Marketing Guide

Products Liability and the Reasonably Safe Product: A Guide for Management, Design and Marketing (CB) **F 134**

## Marketing Strategies

Solar Energy Forecasts (NB) **Je 64**

Markley, R. A. Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**

Marksberry, C. L. The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**

Marlow, J. H. Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Je 104**

Marmol, R. A. Spine Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**

Marozzi, C. A. Detection of Fatigue Crack Formation in Nozzle Welding of Pressure Vessels (79-PVP-101) (A) **S 102**

Marriott, P. W. Matters of Judgment (C) **Je 44**

Marron, H. D. Soot and the Combined Cycle Boiler (79-GT-67) (A) **Je 93**

Marsh, R. O. Structural Cost Optimization of Photovoltaic Central Power Station Modules and Support Structure (79-Sol-17) (A) **Ag 94**

Marshall, R. D. Development of the Electrochemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAS-33) (A) **O 89**

EDC-A Regenerable CO<sub>2</sub> Removal Subsystem for an Enhanced Capability Orbiter (79-ENAS-34) (A) **O 89**

Martens, S. W. Converters Catalyze Controversy... (C) **N 55**

## Marlian "Pawprint"

Marlian "Pawprint" (BTR) **Ja 42**

Martin, B. W. Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**

Martin, G. B. Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

Martin, J. (author) The Wired Society (CB) **Mr 98**

Martinez, E. L. Elections to Fellow Grade **Je 86**

Martinek, F. Experimental Study of the Inflow Effects on a Natural Convection Heat Sink (78-WA/HT-30) (A) **Ap 82**

Martinson, J. Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **Je 100**

Martis, G. Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**

Marlo, P. J. Marine Condenser Design Using Numerical Optimization (79-DET-98) (A) **D 105**

Marlus, W. E. Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 86**

Marul, E. Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **Mr 99**

Marzouk, M. An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Ja 86**

Masek, R. V. Design, Analysis, and Tests of a Shuttle-Type Heat-Pipe-Cooled Leading Edge (79-ENAS-20) (A) **O 88**

Mashima, K. I. Hawaiian Sugarcane Energy Plantations (79-Sol-31) (A) **Ag 96**

Masri, S. F. Proximity Spectra of Oscillators Under Random Excitation (79-DET-80) (A) **N 116**

## Mass

On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) (A) **Je 93**

## Mass Flow

Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Je 95**

Coriolis/Gyroscopic Flow Meter **Mr 35**

Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Je 96**

## Mass Flow Rates

The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**

## Mass Matrices

Accurate Reduction of Stiffness and Mass Matrices for Vibration Analysis and a Rationale for Selecting Master Degrees of Freedom (79-DET-18) (A) **N 110**

## Mass Transfer

Applications of Numerical Heat Transfer (CB) **My 107**

Heat and Mass Transfer in a Catalytic Combustor (79-HT-57) (A) **N 103**

Heat and Mass Transfer in Fixed Bed at Low Reynolds Numbers (79-HT-91) (A) **N 107**

Mass Transfer at the Edge of a Rotating Disk (79-HT-34) (A) **O 95**

## Mass Transfer Techniques

The Flow and Film Cooling Effectiveness Following Injection Through a Row of Holes (79-GT-189) (A) **O 82**

## Mass Transit System

Advanced Urban Transit System (BTR) **N 71**

## Mass Transportation

Transit System Safety Analysis (IF) **My 59**

## Massachusetts Bay Transportation Authority

New Locomotive Hauled Push-Pull Computer Cars for Massachusetts Bay Transportation Authority (79-RT-2) (A) **Ag 96**

## Massless Elastic Chains

Analysis of Massless Elastic Chains with Servo Controlled Joints (78-WA/DSC-34) (A) **Ap 99**

Master, J. E. Investigation of Characteristic Damage States in Composite Laminated (78-WA/Aero-4) (A) **Ap 100**

Matejka, S. Coal Preparation and Handling for a Mine-Mouth Power Station: Design Concepts and Operating Experience (79-JPGC-Pwr-3) (A) **D 97**

## Material Properties

Geomechanical Basis for Design of Underground Salt Caverns (78-Pet-59) (A) **F 126**

Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Je 94**

## Materials

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) (A) **Mr 90**

Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) (A) **Mr 90**

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90**

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) (A) **Mr 90**

The "PXL"—Car of the 80s in Detroit (BTR) **Ja 48**

Reliability as a Materials Property (78-WA/Mat-1) (A) **Mr 89**

Screening Properties of Silicon-Based Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**

Twentieth Structural Dynamics and Materials Conference (NR) **F 69**

Use of Forming Limit Criteria in Forging Complex Shapes

- From Metal-Matrix Composites (78-WA/Mat-2) (A) **Mr 89**
- Materials Handling**  
CAD Applied to Materials Handling Engineering **N 46**  
Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines (78-WA/MH-1) (A) **My 97**  
Computer Aided Drafting and Applications to Materials Handling Engineering (78-WA/MH-5) (A) **My 98**  
Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) (A) **My 97**  
Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**  
Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**  
Rail-to-Barge Transportation of Coal (78-WA/MH-6) (A) **My 98**  
Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MH-7) (A) **My 98**
- Materials Handling Engineering**  
Computer Aided Drafting and Applications to Materials Handling Engineering (78-WA/MH-5) (A) **My 98**
- Materials Science**  
Science of Materials (CB) **Ag 108**
- Materials Wear**  
Wear of Materials Meeting (NR) **Mr 60**
- Mathematical Models**  
Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 99**  
Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Ja 95**  
Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**  
The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**  
Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**  
Electro-Fluid Pulse-Width Modulated Valve (78-WA/DSC-8) (A) **Ap 94**  
Gear Hobbing Torque and Power (78-WA/Prod-33) (A) **My 101**  
A Mathematical Model for Drill Point Design and Grinding (78-WA/Prod-35) (A) **My 101**  
Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**  
Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**  
A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) **Ja 92**
- Mathematical Modeling**  
Mathematical Modeling of Textile Weave Room Sound Propagation (78-Tex-3) (A) **Ja 92**
- Mathematics**  
Encyclopaedic Dictionary of Mathematics for Engineers and Applied Scientists (CB) **Ap 104**
- Mathieu-Hill Equations**  
On a Numerical Method for Solution of the Mathieu-Hill Equations (79-DET-22) (A) **N 111**
- Matley, J. (editor)** Skills Vital to Successful Managers (CB) **S 111**
- Matlin, R. W.** Field Tests of Photovoltaic Power Systems (79-Sol-10) (A) **Ag 93**
- Matrix Method**  
Reliability Analysis of Truss Structures by Using Matrix Method (79-DET-113) (A) **D 106**
- Matsuki, M.** An Investigation of the Early Detection of Defects in Ball Bearings by the Vibration Monitoring (79-DET-45) (A) **N 113**; Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ja 98**
- Matsumura, M.** The Analytical and Experimental Studies on the Structural Design for the Absorber Tube (79-PVP-111) (A) **S 103**
- Matsuzaki, Y.** Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Ja 93**
- Mattar, W. M.** Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**
- Mathews, C. C.** Measured Effects of Flow Leakage on the Performance of the GT-225 Automotive Gas Turbine Engine (79-GT-3) (A) **Ag 97**
- Mathies, H.** Numerical Computations in Nonlinear Mechanics (79-PVP-103) (A) **S 102**
- Mattling, G. E.** Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters (78-WA/FM-4) (A) **Mr 92**
- Matzke, R. A.** Resource Utilization and Design Aspects of the Spectral Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**
- Matzkanin, R. L.** Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Ja 96**
- Maxey, W. A.** Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**
- Maximum Entropy Distribution**  
Use of a Probabilistic Design of the Maximum Entropy Distribution Based on Ranked Data (79-DET-51) (A) **N 114**
- Mayer, J. E., Jr.** An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**
- Mayer, M.** GUID-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Ja 98**
- Mayer, M., Jr.** Textile Machinery Research 1948-1978 (78-Tex-8) (A) **Ja 92**
- Mayfield, J. K.** Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**
- Mayfield, M. E.** A Comparison of Fatigue Test Data on Piping with the ASME Code Fatigue Evaluation Procedure (79-PVP-92) (A) **S 100**
- Mayla, P. S.** Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**
- Mayle, R. E.** An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ja 95**
- Mayne, R. W.** A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) (A) **Mr 85**; Interactive Computer Methods for Design Optimization (78-DET-84) (A) **Ja 90**; A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) (A) **Mr 87**
- Mayor, H. A.** Elections to Fellow Grade **D 93**
- Maystar, S.** Conversion of Industrial Plants to Use Coal as Fuel (78-IPC-Fu-2) (A) **Ja 91**; **Ja 26**
- Mayville, R.** Creep Buckling of Spherical Shells Using a Comparative Stress Method (79-PVP-3) (A) **Ag 103**
- Mazzawy, R. S.** Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ja 95**
- McBride, R. (editor)** The World Energy Book: An A-Z, Atlas and Statistical Source Book (CB) **Ag 108**
- McBride, W. L.** Design of Radial Nozzles in Cylindrical Shells for Internal Pressure (79-PVP-14) (A) **Ag 104**
- McCarty, L. H.** Solar Factors (C) **Ap 43**
- McCarty, R. O., Jr.** The Techniques Involved in the Design, Construction, and Operation of a Waterflood Facility in South Louisiana Marshlands (78-Pet-7) (A) **Ja 97**
- McClellan, W. F.** The Use of Pre-Insulated Pipe Supports as Structural Support Members (79-PVP-47) (A) **Ag 107**
- McClintock, F. A. (recipient)** Nadai Award **Ja CR-12**
- McClough, N. D., Jr.** Automated Biomonitoring Applications to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Biosensing for Watershed Management (79-ENAs-41) (A) **O 89**
- McConnel, J. E.** Industrial Cogeneration-Methods of Measuring and Improving Economic Merit (79-IPC-Pwr-1) (A) **D 100**
- McCoy, A. D.** The Use of Design Models in the Power Industry (79-PVP-7) (A) **Ag 104**
- McCullough, J. E.** The Scroll Machine—An Old Principle With a New Twist **D 46**
- McDonald, C. F.** Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ja 97**; The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ja 96**
- McDonough, J. M.** Asymmetric Boundary Layer on a Nonisothermally Heated Cone (78-HT-108) (A) **N 108**
- McDuffie, N. G.** Resonance in the Ranque-Hilsch Vortex Tube (79-IT-16) (A) **O 93**
- McEligot, D. M.** Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Ja 89**
- McEwan, K. I.** Low Frequency Gas Turbine Noise (79-GT-196) (A) **Ja 104**
- McFarland, C.** Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**
- McGillen, C. D. (author)** Hermes Bound: The Policy and Technology of Telecommunications (CB) **Ja 103**
- McGinnis, R.** Production of Photovoltaic Devices (79-Sol-8) (A) **Ag 93**
- McGowan, J. G.** Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**
- McKee, R. J.** An Experimental Study of the Secondary Flow in a Curved Rectangular Channel (79-FE-6) (A) **O 85**
- McKillop, A. A.** Isothermal Heat Flux Sensor (78-WA/HT-14) (A) **Mr 94**
- McLauchlan, W. P. (author)** Hermes Bound: The Policy and Technology of Telecommunications (CB) **Ja 103**
- McLean, D. H.** The Design and Development of an Air-to-Air Intercooled Engine for Agricultural Tractor Application (78-DGP-28) (A) **Ja 89**
- McMullen, J. C.** Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-196) (A) **Ja 104**
- McMurray, J. T.** Chebyshev Matrix Methods for the Heat Equation: Convergence and Accuracy (79-HT-62) (A) **N 104**; Spectral Methods for Transient Heat Conduction Problems in Simple Geometries (79-HT-61) (A) **N 104**
- McMordie, R. K.** The Use of Power Series Solutions in Radiation Heat Transfer and Thermal Network Analysis (79-HT-65) (A) **N 104**
- McNamara, C. P.** Impact of Building Design on Auxiliary Liquid Metal Piping (79-NE-8) (A) **S 105**
- McNamara, J. E.** Future Requirements for Environmental Control Systems in Naval Aircraft (79-ENAs-9) (A) **O 87**
- McNichols, J. L., Jr.** Nitinol Heat Engines for Low-Grade Thermal Energy Conversion **My 28**
- McWhorter, E. M.** The Five Bar Reciprocating System (79-DE-1) (A) **Ag 101**
- McVay, W. P.** Engineering Responsibility (C) **Ag 43**
- Mead, R. W.** Mass Transfer at the Edge of a Rotating Disk (79-HT-34) (A) **O 95**
- Meakin, J. D.** Low-Cost Thin-Film CdS-Based Solar Cells—Progress and Promise (78-Sol-5) (A) **Ag 92**; **Ag 94**
- Mean Film Thickness**  
Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**
- Mean Velocity**  
Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Ja 99**  
Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Ja 104**
- Mears, D. T.** Diffuse-Specular Analysis of Axisymmetric Surfaces with Application to the Design of Parabolic Reflectors (79-HT-22) (A) **O 93**
- Measured Data**  
Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**
- Measured Effects**  
Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ja 101**
- Measured Flow**  
Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Ja 90**
- Measured Performance**  
Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Ja 95**
- Measured Response**  
Determination of True Cutting Signal by Separation of Instrumentation Dynamics from Measured Response (78-WA/Prod-16) (A) **My 99**
- Measured Spaces**  
Automated Inspection of Wire-Frame Assemblies (BTR) **Ja 43**
- Measured Wave Motions**  
Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**
- Measurement Analysis**  
Determination of Fiber Cross-Sectional Circularity From



Measurements Made in a Longitudinal View (78-Tex-1) (A) **Ja 92**

**Measurement Correlation**  
On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/Prod-23) (A) **My 100**

**Measurement Data**  
Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**

Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Ji 101**

**Measurement Instrument**  
Real-Time Instrument Averages 100 Data Sets (BTR) **S 54**

**Measurement Method**  
Electrified Bees (BTR) **S 54**

**Measurement Rates**  
The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**

An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**

**Measurement Results**  
Blade-Flow Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Ji 98**

The Development of Wake Flow in a Centrifugal Impeller (79-GT-152) (A) **Ji 99**

An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**

Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Ji 98**

**Measurement Statistics**  
Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94**

**Measurement System**  
Acoustic Emission Measurement and Analysis System (BTR) **O 47**

Acoustic Flowmeters for Pipelines **O 28**

**Measurement Techniques**  
The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**

In-Situ Measurement of the Mechanical Properties of Sea Ice (78-Pet-15) (A) **Ja 98**

Mathematical Modeling of Textile Weave Room Sound Propagation (78-Tex-3) (A) **Ja 92**

Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Ja 93**

Measuring Plastic Film Thickness (BTR) **D 58**

Research for Better Fuel Efficiency (BTR) **D 59**

**Measurement Technology**  
Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Ji 104**

**Measurement Values**  
Die Temperatures During Production Drop Forging (78-WA/Prod-28) (A) **My 100**

**Measurements**  
Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Ja 96**

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Ja 97**

Dating via Magnetic 'Fingerprints' in Ancient Pottery (BTR) **Ja 54**

**Measuring Methods**  
Industrial Cogeneration—Methods of Measuring and Improving Economic Merit (79-IPC-Pwr-1) (A) **D 100**

**Mechanical Components**  
A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) (A) **F 129**

**Mechanical Conditions**  
Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**

**Mechanical Draft**  
Waste Heat Disposal to Air with Mechanical and Natural Draft—Some Analytical Design Considerations (78-WA/HT-17) (A) **Mr 94**

**Mechanical Energy Transfer**  
The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**

**Mechanical Engineering**  
October Okay (C) **Ja 48**

Update: Mechanical Engineering Education in the People's

Republic of China **O 36**

**Mechanical Engineering Landmarks**  
National Historic Mechanical Engineering Landmarks (CB) **O 96**

**Mechanical Engineering Profession**  
ME Rekindles Fond Memories (C) **D 54**

**Mechanical Engineers**  
Mechanical Engineers Top Most-Wanted List (NR) **Je 54**

More on the Black M.E. at Tuskegee (C) **Ag 40**

**Mechanical Material Removal**  
Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/Prod-26) (A) **My 100**

**Mechanical Mathematical Model**  
Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**

**Mechanical Properties**  
Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**

First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Ji 94**

In-Situ Measurement of the Mechanical Properties of Sea Ice (78-Pet-15) (A) **Ja 98**

**Mechanical Reliability**  
Mechanical Reliability Considerations in the Modern High Temperature Industrial Gas Turbine (79-GT-101) (A) **Ag 99**

**Mechanical Resonance**  
Resonance Equalization in Feedback Control Systems (78-WA/DSC-24) (A) **Ap 96**

**Mechanical Rodent**  
Micromouse: A Robot with Unlimited Future (BTR) **S 51**

**Mechanical Sequencing Device**  
Two or More Rotary Outputs From One Input (BTR) **Je 55**

**Mechanical System Anchorages**  
An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**

**Mechanical Systems**  
Design for Remote Work in the Deep Ocean (78-WA/OCE-4) (A) **F 130**

Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**

Signature Analysis for Mechanical Systems via Dynamic Data System (DDS) Monitoring Technique (79-DET-10) (A) **N 110**

Thermionic Power Converters Mechanical Systems (78-DET-74) (A) **Ja 99**

**Mechanical Technology**  
R&D Factors and a Proposed National Program for Mechanical Technology (79-DET-66) (A) **N 113**

**Mechanical Test Systems**  
A Family of Programmable Mechanical Test Systems (BTR) **O 49**

**Mechanical Testing**  
Design Audit, Testing and Commissioning of Two 9000 HP Centrifugal Air Compressor Trains (78-Pet-48) (A) **F 125**

**Mechanical Vibrators**  
On a New Type of Vibrating Lift (79-DET-23) (A) **N 111**

**Mechanisms**  
Abrasion of WC-Co Alloys by Quartz (78-Lub-19) (A) **Ja 95**

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **My 99**

Combined Hinge and Latch (BTR) **S 53**

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Ja 90**

On the Mechanism of Chip Breaking (78-WA/Prod-21) (A) **My 100**

Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**

Scanning Microscopy in Microcircuit Failure Analysis (78-WA/Aero-22) (A) **Ap 102**

Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/Prod-15) (A) **My 99**

**Medland, I. C.** Toward the Rational Selection of Base Isolation Systems (79-PVP-53) (A) **S 97**

**Meguid, S. A.** Elastic-Plastic Tension-Torsion in a Circular Bar of Rate-Sensitive Material (79-APM-22) (A) **S 107**

**Mehdizadeh, P.** Metallurgical Studies of Deepwater

Pipeline Laid By Reeled Pipe Method (78-Pet-55) (A) **F 128**

**Melika, L. C.** Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 89**

**Meier-Grotian, J.** An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Ji 94**

**Meissner, H. P.** Recycling Plant, Human and Animal Wastes to Plant Nutrients in a Closed Ecological System (79-ENAS-29) (A) **O 89**

**Melick, G. F., Jr.** Evaluation of Alternative Steam Sources for Industrial Cogeneration (79-IPC-Pwr-2) (A) **D 101**

**Mello, R. M.** Design Considerations for CRBRP Heat Transport System Piping Operating at Elevated Temperatures (79-NE-5) (A) **S 105**

**Mellor, A. M.** Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Ji 104**

Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Ji 101**

**Melnic, B. T.** In Defense of SI (C) **N 54**

**Melt Spinning**  
Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) (A) **Ja 92**

**Melting**  
Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**

**Melting Behavior**  
Effect of Composition of Melting Behavior on Coal Ash (78-WA/CD-2) (A) **Je 91**

**Melting Model**  
Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFB Subassembly (78-WA/HT-26) (A) **Ap 91**

**Membership**  
Are you a Potential ASME Dropout? (PS) **S 77**

**Membership Comments**  
A Give-and-Take Session at WAM (CC) **F 79**

**Membership Recruitment**  
"A Few Good Men" (Ed) **D 19**

**Membrane Evaporator Subsystems**  
Applications of the Thermoelectrically Integrated Membrane Evaporator Subsystem (79-ENAS-48) (A) **O 91**

**Memory Effect**  
Shape Memory Alloys (IF) **S 65**

**Memory Research**  
Pegs of Memory (BTR) **Ap 47**

**Mendiratta, M. G.** Fractography of Reaction-Sintered Si<sub>3</sub>N<sub>4</sub> (79-GT-97) (A) **Ag 99**

**Menzel, G. P.** Resource Utilization and Design Aspects of the Spectral Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**

**Merchant, H. C.** Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) (A) **S 106**

Clamped Beam Parametric Amplifier (79-APM-9) (A) **S 106**

**Merkin, J. H.** Free Convection Boundary Layers on a Non-Isothermal Vertical Flat Plate (79-HT-112) (A) **N 108**

**Merkle, J. G.** Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**

**Mernony, R. N.** Studying the Convective Heat Transfer from a Building Model with Infrared Camera Techniques (78-WA/HT-58) (A) **Mr 97**

**Merrill, J.** The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sci-20) (A) **Ag 94**

**Meserole, F. B.** Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Ja 97**

**Mersky, R.** Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**

**Metal Bearings**  
Optical Analysis of Porous Metal Bearings (78-Lub-29) (A) **Ja 96**

**Metal Buildings**  
Metal Buildings Booming (NB) **Ji 54**

**Metal Compounds**  
Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **Ji 100**

**Metal Cutting**  
Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**



Reliability Analysis of Cutting Tools (78-WA/Prod-9)  
(A) **Je 96**

#### Metal Deformation

On the Hardening Response in Small Deformation of Metals  
(78-WA/APM-21) (A) **My 194**

#### Metal-Matrix Composites

Use of Forming Limit Criteria in Forging Complex Shapes  
from Metal-Matrix Composites (78-WA/Mat-2) (A) **Mr 89**

#### Metallic Diaphragms

Behaviour of Metallic Safety Rupture Diaphragms  
Containing Imperfections (79-DET-107) (A) **D 106**

#### Metallic Material Selection

The Effects of H<sub>2</sub>S on Engineering Design of Oil and Gas  
Wells and Facilities (78-Pet-5) (A) **Ja 97**

#### Metallic Seal

Metallic Thermal Seal (BTR) **Ji 45**

#### Metallic Substrates

Bonding Ceramic Materials to Metallic Substrates for High-  
Temperature Low-Weight Applications (78-WA/  
GT-16) (A) **Ap 90**

#### Metallic Xenon

Producing Metallic Xenon (BTR) **Ja 45**

#### Metallurgical Studies

Metallurgical Studies of Deepwater Pipeline Laid By Reeled  
Pipe Method (78-Pet-55) (A) **F 126**

#### Metallurgical Technology

Coming: Metallurgical Technology (IF) **Mr 56**

#### Metals

The CH-46 Rotor Blade Transition from Metal to Composite  
Materials (78-WA/Aero-9) (A) **Ap 101**

The Corporate Uses of Precious Metals (BTR) **Ap 57**

Fiber Reinforced Metals in Turbine Blades (79-GT/ter-1)  
(A) **O 82**

Lithium Metal for Fusion (ES) **Ji 21**

#### Metals Erosion

Study of Metals Erosion in High Temperature Coal Gas  
Streams (79-GT-88) (A) **Ag 96**

#### Metallurgy

The Tension-Roller-Leveling Process—Elongation and  
Power Loss (78-WA/Prod-18) (A) **My 99**

#### Metallurgy Process

Automatic Hot Forging for Parts Production (BTR) **N 66**

#### Methane

'The Earth Burps Methane...' (BTR) **Ji 42**

Landfill Methane: First U.S. Industry Use (BTR) **D 62**

#### Methane Utilization

Methane Utilization (79-GT-139) (A) **Ji 100**

#### Metric Activists

Metric Conference in Washington (NR) **Mr 60**

#### Metric Conversion

Why Go Metric? (C) **My 44**

#### Metric Guide

Going Metric **Ja 66**

Metric Guide to Mechanical Design and Drafting (CB) **O 96**

#### Metric Policy

Metric Pros and Cons (NB) **F 70**

#### Metric System

In Defense of SI (C) **N 54**

... and Grafoons (C) **My 46**

Metric Second? Just a Second! (C) **N 55**

Metric Units in Engineering (CB) **Mr 98**

SI - The Weight/Mass Controversy **Mr 42**

Stress Analysis (C) **O 42**

Units for Engineering (C) **Ja 45**

Units for the Public (C) **N 54**

Of Weight, Mass ... (C) **My 46**

#### Metrication

Metrication: Should We Or Shouldn't We? (C) **Ji 39**

No If in Metrication! (C) **O 41**

U.S. Metric Board Chief Calls Dual System "Intolerable"  
(NR) **Ji 63**

**Metzger, L.** Bursting Experiment of a High Pressure Multi-  
wall Test Vessel (79-PVP-96) (A) **S 101**

**Metzner, R. C.** In-Situ Measurement of the Mechanical  
Properties of Sea Ice (78-Pet-15) (A) **Ja 98**

**Meyer, L. D.** An Analytic Model for Ball Bearing Vibrations  
to Predict Vibration Response to Distributed Defects  
(79-DET-87) (A) **D 104**

**Meyer, L. J.** A Design Review of Ceramic Components for  
Turbine Engines (79-GT-183) (A) **Ji 103**

**Meyer, T. G.** A Cumulative Fatigue Damage Model for Gas  
Turbine Engine Disks Subjected to Complex Mission  
Loading (78-WA/GT-14) (A) **Ap 90**

**Meyers, A. C.** Design Considerations of Small Solar

Collector Systems Using Plane Heliostats (79-Sol-2)  
(A) **Ag 92**

**Michael, W. K.** Interaction Curves as a Tool in Optima-  
tion and Decision Making (79-DET-3) (A) **N 109**  
Large System Optimization Using Decomposition with  
Soft Specifications (79-DET-99) (A) **D 105**

#### Microcircuit Failure Analysis

Scanning Microscopy in Microcircuit Failure Analysis  
(78-WA/Aero-22) (A) **Ap 102**

#### Microcomputer Application

Microcomputer Application in Engineering Design  
(78-DET-85) (A) **Ja 90**

#### Microcomputer Language

FP/1—A Microcomputer Language for Controlling Hy-  
draulic Systems (78-DE-W-1) (A) **F 128**

Microcomputer Monitors Heart (BTR) **Je 47**

Real-Time Programming with Microcomputers (CB) **Ap 104**

#### Microcomputers

Application of Minicomputers to Finite Element Analysis  
(79-DET-39) (A) **N 112**

#### Microelectronics

Applying Plastics in a Highly Reliable, Low Cost Cooling  
System (78-DE-W-3) (A) **F 129**

#### Microhouse

Microhouse: A Robot with Unlimited Future (BTR) **S 51**

#### Micropolarity

Micropolarity—Roughness Interaction in Hydrodynamic  
Lubrication (79-Lub-8) (A) **D 102**

#### Microprocessor Control

Practical "On-Engine" Microprocessor Control and Moni-  
toring Systems for Gas Turbines (79-GT-181) (A) **Ji 103**

#### Microprocessor-Controlled Test System

A Microprocessor-Controlled Test System Utilizing Relevant  
Component Duty Cycles (78-DE-W-6) (A) **F 129**

#### Microprocessors

Closed Loop, Knock Adaptive Spark Timing Control Based  
on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**

Computer-Controlled Laser Welding (BTR) **Ja 49**

The Microprocessor: Key to Company Survival? (BTR) **Ji 44**

A Microprocessor Controlled Twist Drill Grinder for Au-  
tomated Drill Production (78-WA/Prod-36) (A) **My 101**

Microprocessor Training Aid (BTR) **My 53**

Microhouse: A Robot with Unlimited Future (BTR) **S 51**

Utilities Eye Wind-Powered Machine (BTR) **Ja 46**

#### Microstructural Inhomogeneity

Influence of Microstructural Inhomogeneity on the For-  
mability and Fracture of a Carbon Steel (78-WA/Mat-3)  
(A) **Mr 90**

#### Microwave Applicator

Thermal Analysis and Design Considerations for a Dual-  
Beam Microwave Applicator for Hyperthermia Re-  
search (78-WA/Bio-7) (A) **Mr 91**

#### Microwave Power

Assessing Microwave Power (C) **D 52**

**Midha, A.** On a Numerical Method for Solution of the  
Mathieu-Hill Type Equations (79-DET-22) (A) **N 111**

**Midolo, L. L.** The Use of a Positive Displacement Air Cycle  
Machine in a Closed-Loop Environmental Control Sys-  
tem (79-ENAS-6) (A) **O 86**

**Mihalek, E. W.** Status of Marine Gas Turbine Inlet  
Development Program (79-GT-147) (A) **Ji 100**

**Miller, D. A. J.** The Co-Turboshift—A Novel Gas Turbine  
Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**

**Miller, A. R.** A Flywheel Energy Storage and Conversion  
System for Solar Photovoltaic Applications (79-Sol-1)  
(A) **Ag 92**

**Miller, C. L.** Status of Coal Gasification Program  
(79-PVP-46) (A) **S 98**

**Miller, F. G.** On the Holocaust (C) **Ap 43**

**Miller, G.** Advanced Heat Exchanger Configurations for  
Coal-Fired Fluidized Beds (78-WA/HT-40) (A) **Ap 91**

**Miller, G.** Air Policy Analysis for the Development of Western  
Energy Resources (78-TS-4) (A) **F 129**; The Opti-  
mization of Heat Exchanger Solidity for Coal-Fired  
Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**

**Miller, J. W.** Elections to Fellow Grade **F 120**

**Miller, L. G.** Directional Drilling Completion Method  
Geothermal Wells (78-Pet-35) (A) **F 123**

**Miller, N.** Internal-External Load-Displacement Charac-  
teristics of the In-Vitro Human Ankle Joint (79-Bio-3)  
(A) **S 108**; Relative Motion of the Tibia with Respect to  
the Foot During Internal-External Rotation of a Human

Ankle (79-Bio-4) (A) **S 108**

**Miller, R. W.** Numerical Solutions for Turbulent, Swirling  
Flow through Target Flowmeters (78-WA/FM-4)  
(A) **Mr 92**; The Stolz and ASME-AGA Orifice Equa-  
tions Compared to Laboratory Data (78-WA/FM-2)  
(A) **Mr 92**

**Miller, W. P., Jr.** Elections to Fellow Grade **Ap 87**

**Mills, B.** Realistic Prediction and Control of Vehicle Noise  
Resulting from Road Inputs (79-DET-75) (A) **N 116**

**Mills, F.** The Value of Intentional Redundancy (C) **Je 44**

**Mills, W. J.** Effect of Heat Treatment on Elevated Tempe-  
rature Fatigue-Crack Growth Behavior of Two Heats of  
Alloy 718 (78-WA/PVP-3) (A) **My 95**; The Fatigue-  
Crack Propagation Response of Two Nickel-Base  
Alloys in a Liquid Sodium Environment (79-PVP-83)  
(A) **S 100**

**Miner, D. A.** Gear Hobbing Torque and Power  
(78-WA/Prod-33) (A) **My 101**; Tool Wear and Tool  
Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**

**Minstead, R. M.** The Stability of a Moving Elastic Strip  
Subjected to Random Parametric Excitation  
(79-APM-10) (A) **S 106**

**Minami, H. M.** Preliminary Analysis and Screening Criteria  
for Elevated Temperature Piping (79-NE-6) (A) **S 105**

**Mindlin Plates**  
Finite Element Analysis of Mindlin Plates (78-WA/DE-6)  
(A) **Mr 85**

#### Mine Workings

National Strategic Crude Oil Storage in the Weeks Island  
Dome Salt Mine: Part II—Rock Mechanics Evaluation  
(78-Pet-64) (A) **F 126**

#### Mineral Matter

Influence of the Distribution of Mineral Matter in Coal on  
Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**

#### Mini Baja

Mini Baja—Maxi Mistake (C) **F 54**

#### Miniature Velocimeter

Miniature Velocimeter (BTR) **Ji 50**

#### Minicomputer Simulation Language

Elements of a Bond Graph Simulation Language for Passive  
Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**

#### Minicomputers

Small-Scale Design Optimization Using an Interactive Mi-  
nicomputer (78-WA/DE-9) (A) **Mr 85**

#### Minimization

A Manual Approach to One-Dimensional Minimization  
(78-WA/DE-24) (A) **Mr 87**

#### Minimum-Weight Design

The Influence of Cure Time Restrictions on Minimum-Weight  
Design of Double-Layer SMC Panels (78-WA/Mat-6)  
(A) **Mr 90**

#### Mining

Computer Graphics in Machine Design (79-DE-8) (A) **Ag 101**

#### Mining Operations

Ocean Mining Operations (IF) **Ji 54**

#### Minority Engineering

Minorities in Engineering—Pitfalls and Progress (NR) **F 69**

#### Minority Engineers

Empathy Evoked (C) **Ji 39**

GEM Increases Stipend (EN) **S 72**

Increases in Degrees, Jobs, and Salary in 1978 (EN) **Mr 84**

The Society of Women Engineers—Guidance for Initiates  
into "A Men's World" (NR) **My 62**

#### Minority Opportunities

Postdoctoral Fellowships for Minorities (EN) **D 77**

**Minushkin, B.** Buoyancy Effects on Sodium Coolant  
Temperature Profiles Measured in an Electrically Heated  
Mock-up of a 61-ROD Breeder Reactor Blanket  
Assembly (78-WA/HT-25) (A) **Ap 91**

#### Mirror Surfaces

Heat Pipe Mirror for High-Power Lasers **My 34**

#### Misaligned Face Seals

The Effect of Coning on Radial Forces in Misaligned Radial  
Face Seals (79-Lub-17) (A) **D 103**

#### Misaligned Radial Face Seal

Hydrodynamic Effects in a Misaligned Radial Face Seal  
(78-Lub-12) (A) **Ja 94**

#### Misaligned Seal

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13)  
(A) **Ja 94**

**Mischke, C. R.** A Distribution-Independent Plotting Rule  
for Ordered Failures (79-DET-112) (A) **D 108**; A  
Probabilistic Model of Size Effect in the Fatigue Strength  
of Rounds in Bending and Torsion (79-DE-16) (A) **Ag 103**

**Mischler, W. J.** CAD Applied to Materials Handling Engineering **N 48**; Computer Aided Drafting and Applications to Materials Handling Engineering (78-WA/MT-5) (A) **My 89**

**Miscel, L.** Natural Convection in Heat Generating Fluids in Cavities (79-HT-95) (A) **N 107**

**Missile Guide**  
Satellite Signals to Guide Missiles (BTR) **D 80**

**Missing Link Solution**  
Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**

**Mital, N. K.** Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) (A) **Mr 91**

**Mitani, Y.** Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) (A) **Mr 90**

**Mitchell, A. S.** Heat Transfer by a Corona Wind Heat Exchanger (78-WA/HT-43) (A) **Ap 92**

**Mitchell, L. D.** Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**

**Mitchess, L. D.** A Man-Machine Interactive Method for the Development of Fatigue Design Equations (79-DET-96) (A) **D 104**

**Mitra, M. K.** Cycling Operation of Fossil Fuel Power (79-JPGC-Pwr-5) (A) **D 97**

**Mitre Gates**  
On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

**Miwa, S.** Reliability Analysis of Truss Structures by Using Matrix Method (79-DET-113) (A) **D 106**

**Mixed Layers**  
Mixed Layer Growth and Heat Transfer in a Stratified Fluid Heated from Below (79-HT-107) (A) **N 108**

**Miyachi, T.** An Investigation of the Early Detection of Defects in Ball Bearings by the Vibration Monitoring (79-DET-45) (A) **N 113**; Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **JI 98**

**Miyashiro, H.** Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

**Mobile Compressors**  
Energy Conservation in Modern Piping (78-Pet-68) (A) **F 127**

**Mobile Drilling Platform**  
Mobile Drilling Platform (IF) **Ap 61**

**Mobile Gas Turbine**  
Mobile Gas Turbine Power (IF) **O 53**

**Mobile Welding Screen**  
Mobile Welding Screen (IF) **F 65**

**Mochizuki, S.** Unsteady Flow Phenomena in Multiple Disk Fans (79-FE-10) (A) **O 85**

**Modal Analysis**  
Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-11) (A) **Ja 98**  
Modal Analysis of Gas Turbine Buckets Using a Digital Test System (79-GT-124) (A) **Ag 100**

**Modal Forces**  
Combination of Modal Forces and Stresses in the Seismic Design of Piping Systems (79-PVP-112) (A) **S 102**

**Modal Synthesis Method**  
The Application of Component Mode Synthesis to Covered Groups of Blades (79-DET-92) (A) **D 104**

**Mode Shapes**  
Natural Frequencies and Mode Shapes of Multi-Degree-of-Freedom Systems on a Programmable Calculator (79-DET-36) (A) **N 112**

**Model Applications**  
Power Plant Performance Model (79-JPGC-Pwr-1) (A) **D 97**

**Model Stenosis**  
Investigation of a Pulsatile Flowfield Downstream from a Model Stenosis (78-WA/Bio-6) (A) **Mr 91**

**Model Study**  
Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**  
Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **JI 103**

**Model, M.** Closed-Ecology Life Support Systems (CELSS) for Long-Duration, Manned Missions (79-ENAs-27) (A) **O 88**; Recycling Plant, Human and Animal Wastes to Plant Nutrients in a Closed Ecological

System (79-ENAs-29) (A) **O 89**

**Modern Ballistic Apparatus Development**  
The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**

**Modern Control Concept**  
Some Connections Between Modern and Classical Control Concepts (78-WA/DSC-20) (A) **Ap 96**

**Modification Control Techniques**  
Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

**Modification Evaluation**  
Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) (A) **My 96**

**Modification of Plants**  
Effects of Clean Air Act Amendments of 1977 on Construction or Modification of Natural Gas Processing Plants (78-Pet-10) (A) **Ja 97**

**Modrasky, J.** Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**

**Modular Design**  
Mobile Welding Screen (IF) **F 65**

**Modulated Valve**  
Electro-Fluid Pulse-Width Modulated Valve (78-WA/DSC-8) (A) **Ap 94**

**Moeller, C. E.** 1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**

**Moffatt, W. C.** Compressor Rotating Stall in Uniform and Non-Uniform Flow (79-GT/Isr-18) (A) **O 84**

**Mogul, J. M.** A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **JI 102**

**Mohamed, M.** Measurement of the Thermal Insulation Properties of Fabrics (79-Tex-3) (A) **D 99**

**Moisture Migration**  
Effect of Thickness on Moisture Migration in Light-Weight Concrete Slabs (79-HT-2) (A) **O 92**

**Moisture Separation**  
Problems of Moisture Separation in Wet Steam Turbines (78-WA/GT-4) (A) **Ap 88**

**Moisture Transfer**  
Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products (78-WA/HT-54) (A) **Mr 97**

**Mokelke, H.** The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **JI 103**

**Mokhtar, M. O. A.** Behavior of Finite Journal Bearings Under Dynamic Loading Conditions (79-Lub-22) (A) **D 104**

**Molded Turbine Material**  
Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **JI 94**

**Molins, A.** Resource Utilization and Design Aspects of the Heavy Water Reactor (78-WA/NE-7) (A) **Mr 88**

**Molten Carbonate**  
Second-Generation Fuel Cells (ES) **D 20**

**Molten Glass Flows**  
Numerical Investigation of Electric Field Effects on Unsteady Buoyant Molten Glass Flows (79-HT-98) (A) **N 107**

**Molten Pools**  
Heat Transfer from Heat Generating Molten UO<sub>2</sub>: Interpretations of the Available Experimental Data (79-HT-115) (A) **N 108**

**Molybdenite Ore**  
Treatment of Molybdenite Ore Using a 2-KW Solar Furnace (79-Sol-22) (A) **Ag 94**

**Moment-Resistant Baseplates**  
An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**

**Momentum Measurements**  
Momentum and Temperature Balance Measurements in an Axisymmetric Turbulent Plume (79-HT-42) (A) **O 84**

**Mon, G.** Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers with Position Feedback (78-WA/DSC-3) (A) **Ap 93**

**Monitoring Systems**  
A Low-Cost, On-Site Performance Monitoring System (79-GT-21) (A) **Je 99**  
Practical "On-Engine" Microprocessor Control and Monitoring Systems for Gas Turbines (79-GT-181) (A) **JI 103**

**Monitoring Techniques**  
Signature Analysis for Mechanical Systems via Dynamic

Data System (DDS) Monitoring Technique (79-DET-10) (A) **N 110**

**Monocative Electrocoagulation**  
Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monocative Electrocoagulation (78-WA/HT-66) (A) **Ap 93**

**Monopropellant Reciprocating Engine**  
Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**

**Monorotor Engine**  
Vacuum Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**

**Monorotor Gas Turbines**  
Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit (78-WA/GT-2) (A) **Ap 88**

**Monotonic Spectra**  
Seismic Restraint Spacing: A Velocity Spectrum Method and Other Considerations (79-PVP-12) (A) **Ag 104**

**Monotonicity Analysis**  
Global Noniterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) (A) **Mr 86**

**Monroe, E. S., Jr.** Elections to Fellow Grade **Ap 87**

**Montakhab, A.** Waste Heat Disposal to Air with Mechanical and Natural Draft—Some Analytical Design Considerations (78-WA/HT-17) (A) **Mr 94**

**Montgomery, T. G.** The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**

**Moore, E. F.** Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters (78-WA/FM-4) (A) **Mr 92**

**Moore, F. K.** Aerodynamics of the Heat Exchangers and Their Arrangement in Large Dry Cooling Towers (78-WA/HT-19) (A) **Ap 91**; Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers (78-WA/HT-18) (A) **Ap 90**

**Moore, J.** The Development of Water Flow in a Centrifugal Impeller (79-GT-152) (A) **JI 99**

**Moore, J. W.** Elections to Fellow Grade **Ap 87**

**Moored System**  
Undersea Turbines (BTR) **JI 49**

**Mors, J.** Design and Operation of Large Fossil-Fueled Steam Turbines Engaged in Cyclic Duty (79-JPGC-Pwr-7) (A) **D 97**

**Morgan, E. L.** Automated Biomonitoring Applications to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Bioensing for Watershed Management (79-ENAs-41) (A) **O 89**

**Morgan, F. A.** The Techniques Involved in the Design, Construction, and Operation of a Waterflood Facility in South Louisiana Marshlands (78-Pet-7) (A) **Ja 97**

**Morgan, W. R.** Evaluation of Particulate Emissions from Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**

**Mori, T.** The Analytical and Experimental Studies on the Structural Design for the Absorber Tube (79-PVP-111) (A) **S 103**

**Morrison, F. A., Jr.** Stability of Flow From a Nuclear Cavity (79-FE-5) (A) **O 85**

**Morrison, F. R.** A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**

**Moses, A. J. (author)** The Practising Scientist's Handbook: A Guide for Physical and Terrestrial Scientists and Engineers (CB) **F 134**

**Moses, C. A.** Fuel Property Effects on Combustor Performance (79-GT-178) (A) **JI 102**

**Mo-Shih, Tain** Fire Characteristics Under the Influence of External Radiation (79-HT-71) (A) **N 104**

**Moshfeghian, M.** Local Heat Transfer Measurements in and Downstream from a U-Bend (79-HT-82) (A) **N 105**

**Moskowitz, S.** Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **JI 104**

**Motion**  
Bifurcations in Dynamical Systems With Internal Resonance (78-WA/APM-12) (A) **My 104**  
The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) (A) **S 108**  
On the Motion of Rectangular Prismatic Bodies (79-FE-3) (A) **O 84**

**Motion Computation**  
Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**

**Motion Detection**  
Space Ain't Misbehavin' (C) **D 53**

**Motion Equations**

A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**

**Motor Vehicles**

Pollution and Policy: A Case Essay on California and Federal Experience with Motor Vehicle Air Pollution, 1940-1975 (CB) **Mr 98**

**Motorist Information System**

Automated Highway (BTR) **O 45**

**Motive Power Design**

Progress in Railway Mechanical Engineering—1977-1978 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**

Moussa, A. N. The Effect of Spacing on the Turbulent Burning of Vertical Parallel Walls (79-HT-26) (A) **O 93**

**Moving Loads**

Loads Moving on Beam Supported by Layered Elastic Foundation (79-DET-15) (A) **N 110**

Mowatt-Larsen, E. TankTainer—A Portable Bulk Liquid Tank Container for Intermodal Service (78-WA/RT-10) (A) **My 93**

Mowatt-Larsen, E. TankTrain®—A High Volume Bulk Liquid Transportation System (78-WA/RT-9) (A) **My 93**

Moyer, D. W. Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) (A) **Ja 96**

Moza, A. K. The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**

Mozar, C. J. Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 94**

Mucino, V. H. Design Improvement of a Friction Brake Plate Through Finite Element Analysis (79-DE-18) (A) **Ag 103**

Mucoglu, A. Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ap 92**; Wave Instability of Mixed Convection Flow on Inclined Surfaces (79-HT-105) (A) **N 107**

Mukherjee, B. Fatigue Threshold Stress Intensity and Life Estimation of ASTM-A106B Piping Steel (79-PVP-86) (A) **S 100**

Mukherjee, D. K. Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-28) (A) **Ja 90**

Mukherjee, S. Inelastic Bending of Beams under Time-Varying Moments—A State Variable Approach (79-PVP-82) (A) **S 100**

Mukunoki, I. A Theory of Viscoclastic Analogy for Wave Propagation Normal to the Layering of a Layered Medium (79-APM-24) (A) **S 107**

Muleski, G. E. A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 96**

Mullikin, H. F. Of Weight, Mass... (C) **My 48**

Mulloy, J. M. Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ja 95**

**Multibody Systems**

Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**

**Multicriteria Optimization**

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Ja 90**

**Multilobe Journal Bearings**

Stability and Transient Characteristics of Four Multilobe Journal Bearing Configurations (79-Lub-3) (A) **D 102**

**Multimode Leak Detection System**

Multimode Leak Detection System (78-Pet-53) (A) **F 125**

**Multipass Effect**

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**

**Multiple Coherence**

Some Formulas for the Multiple and Partial Coherence Problem (79-DET-33) (A) **N 112**

**Multiple Integral Representation**

Concerning a Creep Surface Derived from a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**

**Multipiers**

Computational Enhancements to the Method of Multipliers (79-DET-77) (A) **N 116**

**Multipoint Models**

Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmission (78-DET-89) (A) **Ja 90**

**Multirigid Body Systems**

Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**

**Multistage Axial Flow Compressors**

The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ja 103**

**Multistage Centrifugal Pumps**

Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

**Multistage Heat Exchanger System**

Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**

**Multi-Stage Turbine**

Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Ja 96**

**Multi-Tool Machining Analysis**

Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**

**Multivariable Computer Control**

Experience with Experimental Applications of Multivariable Computer Control (78-WA/DSC-26) (A) **Ap 96**

**Multivariable Controller**

A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ja 94**

**Multivariable Identification**

Multivariable Identification of Some Paper Plant Parameters (78-WA/DSC-4) (A) **Ap 94**

Mumma, S. A. Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Ja 89**

Munro, N. A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ja 94**

Munro, R. Progress in Understanding and Control of Ring Lubrication (78-DGP-25) (A) **Ja 89**

Mura, T. The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) (A) **S 107**

Murakami, T. The Analytical and Experimental Studies on the Structural Design for the Absorber Tube (79-PVP-111) (A) **S 103**

Murakawa, H. Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**; Part 2: Incompressible Material (79-APM-6) (A) **S 106**

Muramatsu, M. Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**

Murotsu, Y. Optimum Structural Design Under Constraint on Failure Probability (79-DET-114) (A) **D 106**; Reliability Analysis of Truss Structures by Using Matrix Methods (79-DET-113) (A) **D 106**

Murphy, A. H. Why Registration? (C) **Ap 42**

Murphy, B. T. Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**

Murphy, C. L. Review of Liquid Piston Pumps and Their Operation with Solar Energy (79-Sol-4) (A) **Ag 92**

Murphy, H. D. Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Je 89**

Murphy, K. E., Jr. The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) (A) **Ja 88**

Murray, R. G. Production of High Value Solid Fuels from Cellulosic Feed Materials by the Koppelman Process (79-Sol-33) (A) **Ag 96**

Murray, R. W. Food System Galley for Space Shuttle (79-ENAs-47) (A) **O 91**

Myers, G. E. Long-Time Solutions to Heat-Conduction Transients with Time-Dependent Inputs (79-HT-66) (A) **N 104**

Myers, P. S. Sound Power Levels of Large Engines Measured in Semi-Reverberant Environments (78-DGP-20) (A) **Ja 88**

**Myocardium**

In Vivo Constitutive Properties of the Passive Left Ventricular Myocardium (79-Bio-6) (A) **S 109**

Na, T. Y. On the Design of Ductile Elastic Annular Diaphragms (79-DET-109) (A) **D 106**

Nabbe, J. C. Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications (78-WA/GT-16) (A) **Ap 90**

Nachtigal, C. L. Development of a Hydraulic Chambered, Actively Controlled Boring Bar (78-WA/Prod-20) (A) **My 100**

Nageli, D. W. Fuel Property Effects on Combustor Performance (79-GT-178) (A) **Ja 102**

Nagaraj, V. T. Optimization of Aircraft Undercarriages (79-DET-89) (A) **D 104**

Naff, S. Reactor Vessel Blowdown: Determination of Emergency Core Cooling Parameters (79-HT-83) (A) **N 105**

Nagel, D. A. A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) (A) **Mr 91**; Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**

Nagengast, J. E. DD-963 Class Waste Heat Recovery System Experience (79-GT-159) (A) **Ag 106**

Naghdhi, P. M. On the Onset of Breakup in Inviscid and Viscous Jets (79-APM-7) (A) **S 108**

Nagoraki, H. I. Congratulations (C) **N 56**

Nagpal, V. Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**

Naltescu, L. Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**

Nalajima, K. Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) (A) **Ja 95**

Nakafima, M. Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**

Nakajima, F. NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ja 92**

Nakamura, N. Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**; Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Je 90**

Nakano, M. Acoustic Emission Testing During a Burst Test of a Thick Walled 2½Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

Nance, G. W. Annular Geometry—Its Effect on Kick Tolerance (78-Pet-63) (A) **F 127**

Narayananmurthi, R. G. Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Ja 100**

Narayanan, T. V. Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) (A) **Ag 104**; Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**

Narciso, R. R. The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**

Nash, J. H., Jr. Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

Nash, J. M. Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**

Nason, J. R. Shuttle Orbiter Flash Evaporator (79-ENAs-14) (A) **O 87**

Nathoo, N. S. Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 98**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**

National Aeronautics & Space Administration Skylab—Will It Or Won't It? (BTR) **My 51**

System May Speed Growth of Solar Energy Storage (BTR) **Je 55**

Workhorse of Space (BTR) **F 56**

National Council of Engineering Examiners (NCEE) NCEE Seeks P.E. Exam Problems (NR) **N 78**

National Energy Act Solar Incentive from National Energy Act (BTR) **Ap 55**

National Energy Plan Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

From the Folks That Gave You... (WW) **Ja 64**

The National Energy Plan and Solar Energy Technology (78-TS-2) (A) **F 129**

The Solar Alternative and the National Energy Plan **N 42**



## National Nominating Committee

It's Time to Plan Ahead for Future ASME Leaders **Mr 74**

## National Research Council

A New and Improved Census in 1980 (NB) **F 70**

Postdoctoral Fellowships for Minorities (EN) **D 77**

## National Science Foundation (NSF)

Employment Increase in University Personnel (EN) **N 80**

## National Science Foundation

Earthquake Research (EN) **Je 68**

U.S.-Soviet Science Accords (NB) **Ap 64**

## Natural Convection Heat Sink

Experimental Study of the Inflow Effects on a Natural

Convection Heat Sink (78-WA/HT-30) (A) **Ap 92**

## Natural Convections

Directional Dependence and Non-Uniformity of Joule Heat-

ing in Natural Convection Experiments (79-HT-96)

(A) **N 106**

Effect of Cell Size on Natural Convection in High LD Tilted

Rectangular Cells Heated and Cooled on Opposite

Faces (78-WA/HT-5) (A) **Mr 93**

An Experimental Study of Transition and Turbulent Natural

Convection in a Vertical Open-Ended Tube (79-HT-37)

(A) **O 95**

Finite Element Analysis of Transient Natural Convection in

Enclosed Spaces (79-HT-49) (A) **N 102**

Laser Anemometer Measurements in Turbulent Natural

Convection over a Vertical Flat Surface (79-HT-106)

(A) **N 108**

The Measurement of Natural Convective Heat Transfer in

Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**

A Model of MHD Natural-Convection Heat Transfer from a

Finite Cylinder (78-WA/HT-24) (A) **Mr 95**

Natural Convection in Heat Generating Fluids in Cavities

(79-HT-95) (A) **N 107**

Natural Convection of a Heat Generating Fluid in a Closed

Cavity (78-WA/HT-6) (A) **Mr 93**

Natural Convection from Spheres and Cylinders

(79-HT-111) (A) **N 108**

Natural Convection from Vertical Plates with Semicircular

Leading Edges (79-HT-104) (A) **N 106**

Numerical Solution of Two-Dimensional Natural Convection

in Enclosed Spaces (78-WA/HT-11) (A) **Mr 93**

Numerical Solution of Three-Dimensional Natural Convection

by the Strongly Implicit Procedure (78-WA/HT-10)

(A) **Mr 93**

## Natural Draft

Waste Heat Disposal to Air with Mechanical and Natural

Draft—Some Analytical Design Considerations

(78-WA/HT-17) (A) **Mr 94**

## Natural Energy System

Economics of Wind Generated Power (78-Pet-80) (A) **F**

**126**

## Natural Frequencies

Dynamic Seismic Analysis of Long Segmented Lifelines

(78-WA/PVP-4) (A) **My 96**

Natural Frequencies of Clamped Orthotropic Rectangular

Plates With Varying Thickness (78-WA/APM-9)

(A) **My 104**

On Some General Properties of Combined Dynamical Sys-

tems (78-WA/APM-26) (A) **Je 93**

## Natural Gas

Application of Gas Turbine/Compressors in LNG Plants

(79-GT-85) (A) **Je 95**

The LNG Industry: An Overview of Projects and Costs

(78-Pet-32) (A) **F 122**

Natural Gas Recovery (ES) **Mr 23**

SRI President Sees Hope in Energy Crunch (NR) **My 60**

## Natural Gas Liquid

Offshore NGL Recovery Project (IF) **O 52**

## Natural Gas Pipelines

New Cast Steel Alloys Readied for Arctic Gas Service

(BTR) **S 60**

Steam and Gas Turbine Combined Cycle Equipment Cur-

rently Available for Natural Gas Pipelines (79-GT-114)

(A) **Je 97**

## Natural Gas Processing Plants

Effects of Clean Air Act Amendments of 1977 on Construc-

tion or Modification of Natural Gas Processing Plants

(78-Pet-10) (A) **Je 97**

Naugle, F. V. Preliminary Analysis and Screening Criteria

for Elevated Temperature Piping (79-NE-6) (A) **S 105**

## Naval Propulsion Applications

Conceptual Design of an 80,000-shp Fossil-Fired Closed-

Cycle Helium Turbine Propulsion System for Naval Ship

Applications (79-GT-94) (A) **Ag 99**

## Naval Systems Engineering Students

The Classroom Design of a COGAS Plant by Naval Systems

Engineering Students (79-GT/18-7) (A) **O 83**

## Navigable N500

Gas Turbine Installation in Navigable N500 (79-GT-29)

(A) **Ag 97**

Nawrocki, P. M. Accelerating the Commercialization of

New Technologies (78-WA/TS-4) (A) **Je 94**

Nayfeh, A. H. Simulation of the Influence of Bonding

Materials on the Dynamic Behavior of Laminated Com-

posites (78-WA/APM-15) (A) **My 104**

Nealy, D. A. Evaluation of Laminated Porous Wall Materi-

als for Combustor Liner Cooling (79-GT-100) (A) **Ag**

**99**

Negreanu, M. J. An Analytical and Experimental Invest-

igation of a Rotating Boiler (79-HT-33) (A) **O 94**

Negrelli, D. E. (recipient) Melville Medal **Ja CR-13**

Nelson, C. C. A Torquewheel Analysis of the Space

Shuttle Main Engine High Pressure Turbopumps

(79-DET-76) (A) **N 116**

Nelson, D. V. Strain Limits for Highly Irradiated Core

Components (79-PVP-49) (A) **S 97**

Nelson, H. D. The Dynamics of Rotor-Bearing Systems

With Axial Torque—A Finite Element Approach

(79-DET-68) (A) **N 115**; Stability Analysis of Rotor-

Bearing Systems Using Component Mode Synthesis

(79-DET-63) (A) **N 113**

Nelson, I. Dynamic Seismic Analysis of Long Segmented

Lifelines (78-WA/PVP-4) (A) **My 96**

Nelson, R. D. In-Situ Measurement of the Mechanical

Properties of Sea Ice (78-Pet-15) (A) **Ja 98**

Nelson, W. G. Orbital Service Module Thermal Control

System Design (79-ENAS-22) (A) **O 88**

Nemati-Nasser, S. Harmonic Waves in Layered

Composites: New Bounds on Eigenfrequencies

(78-WA/APM-23) (A) **My 105**; Minimum Spacing of

Thermally Induced Cracks in Brittle Solids (78-Pet-62)

(A) **F 126**

Neroutsopoulos, A. A. The Control of Structural Vibration

by Frictional Damping in Electro-Discharge Machined

Joints (79-DET-79) (A) **N 116**

Nervagna, H. Modularity and Optimization in Fluid Loop

Radiator Systems (79-ENAS-37) (A) **O 90**

## Neural Structures

The Complexity of Mind: Magic, No; Mystery, Yes (BTR) **S**

**81**

## Neutron Activation Analysis

Model for the Transfer of Polymer to Rough, Hard Surfaces

(78-Lub-31) (A) **Ja 96**

## Neutron Flux

Overview of Fuel Element Design **Ap 30**

Neville, R. C. (author) Solar Energy Conversion: The

Solar Cell (CB) **S 111**

New, R. W. The Lancaster Damper—A Design Procedure

for Optimizing the Damping Ratio for a Cylindrical Slug

Damper Fitted to a Machine Element (78-WA/DE-5)

(A) **Mr 84**

## New International Publication

Brrrrr (NB) **D 75**

## New Product Development

The Design Audit Concept in New Product Development

(78-DE-W-2) (A) **F 128**

## New Publication

Graduating Engineer Magazine (EN) **S 72**

Hewman, J. R. Low Frequency Gas Turbine Noise

(79-GT-196) (A) **Je 104**

Hewman, S. Z. Plastic Buckling of Cylindrical Shells

under Axial Compression (79-PVP-99) (A) **S 101**

Newton, J. W. Power Requirements for Offshore Hydro-

carbon Production from the Brent System

(79-GT-44) (A) **Je 91**

Ng, K. W. The Lancaster Damper—A Design Procedure

for Optimizing the Damping Ratio for a Cylindrical Slug

Damper Fitted to a Machine Element (78-WA/DE-5)

(A) **Mr 84**

Nicholas, J. C. Experimental-Theoretical Comparison of

Instability Onset Speeds for a Three Mass Rotor Sup-

ported by Step Journal Bearings (79-DET-56) (A) **N**

**115**

Nichols, R. W. (editor) Developments in Pressure Vessel

Technology Flow Analysis (CB) **Ag 108**

## Nickel Mining

Major Mining Projects (IF) **N 75**

Nicolas, D. P. Scanning Microscopy in Microcircuit

Failure Analysis (78-WA/Aero-22) (A) **Ap 102**

Nicolas, J. J. Internal Aerodynamics and Heat Transfer

Problems Associated with Film Cooling of Gas Turbines

(79-GT-57) (A) **Je 93**

Nied, H. A. Modal Analysis of Gas Turbine Buckets Using

a Digital Test System (79-GT-124) (A) **Ag 100**

Niggemann, R. E. Fluid Selection and Optimization of an

Organic Rankine Cycle Waste Heat Power Conversion

System (78-WA/Ener-6) (A) **Je 93**

Nishi, H. The Analytical and Experimental Studies on the

Structural Design for the Absorber Tube (79-PVP-111)

(A) **S 103**

Nishikawa, N. Development of a Very High Temperature

Steam Heater (78-WA/HT-2) (A) **Mr 92**

Nishio, K. An Investigation of the Early Detection of

Defects in Ball Bearings by the Vibration Monitoring

(79-DET-45) (A) **N 113**

Nishiwaki, N. Experimental Investigation of Liquid Metal

Turbulent Heat Transfer under Transverse Magnetic

Field (79-HT-41) (A) **O 94**; An Investigation of Local

Heat Transfer During Grinding Process—Effects of

Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My**

**98**

## Nitinol Engines

Nitinol Engines (C) **S 50**

## Nitinol Heat Engines

Nitinol Heat Engines for Low-Grade Thermal Energy

Conversion **My 23**

## Nitrogen

Viscosity of Nitrogen Near the Critical Point (78-WA/HT-38)

(A) **Ap 91**

## Nitrogen Oxide

The Modeling of NO Generation from Coal-Derived Liquids

in Combustion Turbines (79-JPGC-GT-4) (A) **D 98**

## Nitrogen Oxide Emissions

Air Consumption and Nitrogen Oxide Emissions of Charge

Cooled Engines (78-DGP-12) (A) **Je 87**

## Nitrogen Oxides

Catalytic Reduction of Nitrogen Oxides Emitted from Sta-

tionary Sources (78-Pet-29) (A) **F 122**

Characteristics of Combustion and NO<sub>x</sub> Formation in Large

Turbulent Diffusion Flames in Furnace (78-WA/Fu-2)

(A) **Je 96**

Combustion Modifications for the Control of Air Pollutant

Emissions from Coal Fired Utility Boilers

(78-WA/APC-7) (A) **Ap 103**

Controlling Emissions (ES) **Mr 23**

The Effects of LBG Composition and Combustor Charac-

teristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Je**

**103**

Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers

(78-WA/APC-1) (A) **Ap 102**

NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas

Turbine Exhaust Gas (79-GT-69) (A) **Je 92**

Nilzel, M. E. SUPAN—A Computer Program for the

Analysis of Beam Type Piping Supports (79-PVP-19)

(A) **Ag 104**

Niwa, K. Optimum Structural Design Under Constraint on

Failure Probability (79-DET-114) (A) **D 108**; Reliability

Analysis of Truss Structures by Using Matrix Method

(79-DET-113) (A) **D 106**

Niyogi, B. K. Piping Reaction on Active and Non-Active

Equipment Nozzles (79-PVP-28) (A) **Ag 105**

Nizou, P. Y. Heat Transfer to Plane Turbulent Wall Jet

Discussion on the Reynolds Analogy Factor (79-HT-40)

(A) **O 94**

## Nocturnal Light Sightings

Insects as UFO's (BTR) **F 56**

Nof, S. Y. Analysis of Operating Rules in a Computerized

Manufacturing System (78-WA/Prod-38) (A) **My 102**

Nogotov, E. F. (author) Applications of Numerical Heat

Transfer (CB) **My 107**

## Noise Description

Low Frequency Gas Turbine Noise (79-GT-196) (A) **Je 104**

## Noise Generation

Noise Generated from Non-Uniform Clearance of Turbo-

compressors and Fans of Aircraft (79-DET-30) (A) **N**

**111**

Statistical Analysis of the Influence of Process Variables on

Noise Generation in Impact Hot Forming (79-DET-29)

(A) **N 111**

Stick-Slip Induced Noise Generation in Water-Lubricated

Compliant Rubber Bearings (79-Lub-21) (A) **D 104**

## Noise Generators

A Pseudo-Random Noise Generator for Dynamic Response

Testing of Offshore Structures (79-DET-42) (A) **N 112**

## Noise Levels

Noise Level Considerations Associated with Power Plant

Condenser Steam Dump (79-PVP-9) (A) **Ag 104**

## Noise Reduction

Noise Reduction on Textile Ring-Spinning Frames

(79-DET-33) (A) **N 112**



**Nollet, A. R.** A Review of Solid Waste Resource Recovery Technology: Appraisal of Operations and Economics with Assessment and Economics with Assessment of Newly-Developed Processing (79-ENAs-40) (A) **O 90**

#### **Nominations**

Nominations for ASME National Officers **Ag 80**

#### **Nonboiling Pools**

Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**

#### **Noncatalytic Conversion**

Noncatalytic Conversion of Biomass to Gasoline (79-Sol-29) (A) **Ag 96**

#### **Nonconservation Systems**

A Simplified Stability Criterion for Nonconservation Systems (79-APM-19) (A) **S 107**

#### **Nonlinear Inverse Heat Conduction**

Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**

#### **Non-Linear Microbuckling Model**

A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites (78-WA/Aero-1) (A) **Ap 100**

#### **Nonlinear Monotonic Functions**

Construction of Nonlinear Monotonic Functions With Selectable Intervals of Almost Constant or Linear Behavior (78-WA/APM-22) (A) **My 104**

#### **Nonlinear Optimization Methods**

Note on Comparison of Nonlinear Optimization Methods (79-DET-118) (A) **D 107**

#### **Nonlinear Response**

Nonlinear Response of Short Squeeze Film Dampers (79-Lub-24) (A) **D 103**

#### **Nonlinear Stability Analysis**

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**

#### **Nonlinear Thermoelastic Behavior**

Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and Its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**

Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**

#### **Non-Saturated Discharge**

Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy (78-WA/PEM-3) (A) **My 95**

#### **Non-Symmetric Nonlinearities**

Harmonic Analysis of Dynamic Systems with Non-Symmetric Nonlinearities (78-WA/DSC-10) (A) **Ap 94**

#### **Nonsynchronous Rotor Vibrations**

Spline Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**

#### **Nonsynchronous Vibrations**

Nonsynchronous Vibrations Observed in a Supercritical Power Transmission Shaft (79-GT-146) (A) **Ag 100**

#### **Nonsynchronous Whirling**

Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 99**

#### **Normal Mode Uncoupling**

Normal Mode Uncoupling of Systems With Time Varying Stiffness (79-DET-19) (A) **N 110**

#### **Normal Plastic Anisotropy (R) Value**

An In-Field Method for the Determination of the Normal Plastic Anisotropy (R) Value for Sheet Materials (78-WA/Prod-41) (A) **Je 90**

**Normandin, J.** Twistless Yarns and Woven Fabrics Made Therefrom (79-Tex-4) (A) **D 99**

**Norstrom, E.** Physical Characterization of Particulate Material from a Turbine Engine (79-GT-179) (A) **Jl 102**

**North, W. J.** Experimental Cultivation of Giant Kelp in Oceanic Environments (79-Sol-30) (A) **Ag 95**

**Noujaim, R. A.** On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/Prod-23) (A) **My 100**

**Novak, S. P.** Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**

**Novendstern, E. H.** Testing of the CRBRP Direct Heat Removal Service in a 1/21 Scale Model (79-HT-5) (A) **O 91**

**Novotny, J. L.** (recipient) Melville Medal **Ja CR-13**

#### **Nozzle Design**

Can Nozzle Design be Effectively Improved for Drilling

Purposes (78-Pet-51) (A) **F 125**

#### **Nozzle Extraction Process**

Revised Theory for the Quantitative Analysis of Fabric Hand (79-Tex-5) (A) **D 100**

#### **Nozzle Guide Vanes**

Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Jl 90**

#### **Nozzle Life**

Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Jl 91**

#### **Nozzle Performance**

Relationships for Nozzle Performance Coefficients (79-GT-145) (A) **Jl 101**

#### **Nozzleless Turbine Casings**

Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Jl 95**

#### **Nozzles**

Application of Al-Ceramic Nozzle to Radial Flow Turbine (79-GT-96) (A) **Ag 98**

Electro-Fluid Pulse-Width Modulated Valve (78-WA/DSC-8) (A) **Ap 94**

Fillet Size in a Liquid Jet (79-FE-1) (A) **O 94**

Piping Reaction on Active and Non-Active Equipment Nozzles (79-PVP-28) (A) **Ag 105**

Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Jl 93**

#### **Nuclear-Bi-Brayton System**

Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Jl 98**

#### **Nuclear Cavity**

Stability of Flow From a Nuclear Cavity (79-FE-5) (A) **O 85**

#### **Nuclear Components**

Fatigue Life Evaluation of Nuclear Components and Piping (79-PVP-16) (A) **Ag 104**

#### **Nuclear Costs**

Nuclear Vs. Coal Costs (NB) **Je 67**

Ninth Annual Intersociety Conference on Environmental Systems, preview (NR) **Je 63**

Second U.S. National Conference on Earthquake Engineering, preview (NR) **Je 63**

#### **Nuclear Diesel Generator Sets**

The Special Requirements for Nuclear Application Standby Diesel-Generator Sets (78-DGP-6) (A) **Ja 86**

#### **Nuclear Energy**

Diversifying Our Energy Options (C) **D 54**

So You Want to Burn Coal (WW) **Mr 68**

#### **Nuclear Engineering**

An Approximate Analysis of Foundation Stresses in Horizontal Pressure Vessels (79-NE-1) (A) **S 104**

Closed Loop In-Reactor Assembly (CLIRA)—A Fast Flux Test Facility Test Vehicle (78-WA/NE-6) (A) **Mr 88**

A Comparative Assessment of the LMFBR and Advanced Converter Fuel Cycles (79-JPGC-NE-3) (A) **D 96**

Design Considerations for CRBRP Heat Transport System Piping Operating at Elevated Temperatures (79-NE-5) (A) **S 105**

Design of Elevated Temperature Piping for Advanced Nuclear Plants (79-NE-7) (A) **S 105**

Design of an HTGR for High-Temperature Process Heat Applications (79-JPGC-NE-2) (A) **D 96**

Fusion Power Development: Status and Prospects (79-JPGC-NE-1) (A) **D 96**

A High Reliability Straight Tube LMFBR Steam Generator Design (79-NE-4) (A) **S 104**

High Temperature Testing of a Sodium Pump (78-WA/NE-12) (A) **Mr 89**

HTGR Strategy for Reduced Proliferation Potential (78-WA/NE-11) (A) **Mr 89**

An IHX Design for Pool Type LMFBR System Application (79-NE-3) (A) **S 104**

Impact of Building Design on Auxiliary Liquid Metal Piping (79-NE-6) (A) **S 105**

Impact of Clinch River Breeder Reactor Plant on Breeder Research and Development Programs (79-JPGC-NE-5) (A) **D 97**

Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**

Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) (A) **Mr 87**

Nonproliferation Alternative Systems Assessment Program (NASAP)—An Overview (78-WA/NE-10) (A) **Mr 89**

Nuclear Fuel Service Center Approach to Reducing Proliferation Potential (78-WA/NE-9) (A) **Mr 88**

Nuclear Power Plant Engineering (CB) **N 119**

Perceptions of Risks and Timing in Breeder Development Decisions (79-JPGC-NE-4) (A) **D 96**

Preliminary Analysis and Screening Criteria for Elevated Temperature Piping (79-NE-6) (A) **S 105**

A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) (A) **Mr 87**

Resource Utilization and Design Aspects of the Heavy Water Reactor (78-WA/NE-7) (A) **Mr 88**

Resource Utilization and Design Aspects of the Spectral Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**

Simplified Inelastic Analysis in Helical Coil Heat Exchanger Design (79-NE-2) (A) **S 104**

Suggested Improvements in the Measurement of Pump Vibration for In-Service Inspection (78-WA/NE-5) (A) **Mr 88**

The Value of Prototype Testing in the Development of In-Vessel Handling Machine for FFTF (78-WA/NE-3) (A) **Mr 87**

#### **Nuclear Fuel Assembly**

In-Core Detection of Nuclear Fuel Assembly Vibration (79-DET-43) (A) **N 113**

#### **Nuclear Fuel Cost Reduction**

Patent Could Greatly Reduce Nuclear Fuel Costs (EN) **Je 60**

#### **Nuclear Fusion Reactors**

Cryogenic Plant for Fusion Research (IF) **Jl 55**

#### **Nuclear Gas Turbine**

Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Jl 97**

#### **Nuclear Heat**

Design of an HTGR for High-Temperature Process Heat Applications (79-JPGC-NE-2) (A) **D 96**

#### **Nuclear Piping**

Design Specifications for ASME Section III Nuclear Class 1 Piping (79-PVP-75) (A) **S 99**

#### **Nuclear Plant Safety**

Nuclear Plant Safety (EN) **Jl 67**

#### **Nuclear Plant Personnel**

Simulators to Train Nuclear Plant Personnel (BTR) **O 45**

#### **Nuclear Plants**

Design of Elevated Temperature Piping for Advanced Nuclear Plants (79-NE-7) (A) **S 105**

Three Mile Island—A Damage Assessment (ES) **Je 18**

#### **Nuclear Power**

Brownout for Nuclear Power? (NR) **Je 60**

Non-Nuclear Futures: The Case for an Ethical Energy Strategy (CR) **N 118**

Nuclear Power and Radioactive Waste: Sub-Seabed Disposal Option? (CB) **Ap 104**

Nuclear Power, Volume 1—Power Plant Design, and Volume 2—Project Management (TL) **My 106**

Odyssey of an "Event"; Ordeal at Three Mile Island (NR) **Je 50**

Return to the Stone Age (C) **F 55**

#### **Nuclear Power Design**

The Value of Intentional Redundancy (C) **Je 44**

#### **Nuclear Power Plants**

An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**

Decommissioning of Nuclear Plants (BTR) **N 81**

Labor Peace (ES) **Ag 18**

Nuclear Power Plant (IF) **Ap 60**

Probabilistic Seismic Response Analysis of Nuclear Power Plant Structures (79-PVP-73) (A) **S 99**

A Rebuttal (ES) **Je 18**

Science of the Big Bend (BTR) **Jl 48**

Statistical Filter Warns of Reactor Core Problems (BTR) **N 83**

Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 90**

Vibration of Nuclear Power Plant Primary Coolant System Piping During Normal Operation (79-DET-28) (A) **N 111**

#### **Nuclear Pressure Vessels**

A Damage Tolerant Design and Inspection Philosophy for Nuclear and Other Pressure Vessels (79-PVP-124) (A) **S 104**

#### **Nuclear Reactor Pressure Vessel**

Mammoth Automated Welding Assembly (BTR) **D 57**

#### **Nuclear Reactor Vessels**

Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analysis of Nuclear Reactor Vessels (79-PVP-116) (A) **S 103**

Giant Robot Inspects Nuclear Reactor Vessels (BTR) **N 59**

## Nuclear Reactors

The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**

Uranium from Seawater (ES) **Ji 20**

## Nuclear Risks

Perspective on Nuclear Risks **Je 74**

## Nuclear Safety

Panel on Nuclear Safety (ES) **S 21**

## Nuclear Shipping Casks

Elastic and Viscoplastic Impact Bending Response Analysis of Nuclear Shipping Cask Structures (79-PVP-43) (A) **Ag 107**

## Nuclear Steam Supply Systems

A Vote of Confidence (ES) **Ap 29**

## Nuclear Steam Turbines

Forgings Replace Castings on Larger Turbine Vanes (BTR) **Mr 51**

## Nuclear Vessels

Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**

## Nuclear Waste Storage

Nuclear Waste Storage (NB) **Ji 85**

## Nuclear Wastes

Disposing of Nuclear Wastes (ES) **Ap 20**

Solidifying Nuclear Waste (ES) **Mr 23**

## Nuclear Weapons

Small, Long-Lived Thermal Battery (BTR) **O 44**

## Nucleate Boiling

Nucleate Boiling Performance of Refrigerants and Refrigerant-Oil Mixtures (79-HT-79) (A) **N 105**

## Numerical Accuracy

Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) (A) **Ap 96**

## Numerical Analysis

Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Je 89**

## Numerical Computations

Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Je 94**

Numerical Computations in Nonlinear Mechanics (79-PVP-103) (A) **S 102**

Numerical Computation of Turbulent Flow Structure in a Cyclone Chamber (79-HT-31) (A) **O 94**

## Numerical Controls

Design of Computer Control for Manufacturing Systems (78-WA/Prod-14) (A) **My 99**

Electronic Hardware and Its Impact on Numerical Control (78-WA/DSC-16) (A) **Ap 95**

The Future of Numerical Controls **S 27**

Speculations on the Future of Numerical Controls (78-WA/DSC-9) (A) **Ap 94**

## Numerical Example

Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**

## Numerical Flow Simulation

Application of Average Flow Model to Lubrication Between Rough Sliding (78-Lub-17) (A) **Je 95**

## Numerical Heat Transfer

Applications of Numerical Heat Transfer (CB) **My 107**

## Numerical Investigations

Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) (A) **Ap 89**

## Numerical Method

Roots of Lambda Matrices (78-WA/APM-4) (A) **My 102**

## Numerical Models

A Numerical Model for Stirling Cycle Machines (79-GT/ser-16) (A) **O 84**

Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**

## Numerical Optimization

Marine Condenser Design Using Numerical Optimization (79-DET-98) (A) **D 105**

## Numerical Procedure

Solving Three Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) (A) **F 127**

## Numerical Results

Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**

Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**

Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ap 92**

Three-Dimensional Lifting-Surface Theory for an Annular Blade Row (79-GT-182) (A) **Ji 103**

Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **Je 100**

## Numerical Simulation

A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**

## Numerical Solutions

Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) (A) **S 102**

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-23) (A) **Je 93**

Numerical Solution of the Planar Hydrostatic Foil Bearings (78-Lub-23) (A) **Je 95**

Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-80) (A) **Ap 92**

Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Ji 102**

## Numerical Study

A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Je 89**

Nunz, G. J. The Federal Hot Dry Rock Geothermal Energy Development Program: An Overview (79-PVP-36) (A) **Ag 105**

Nuske, D. J. A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ji 94**

Nuspl, S. P. An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**

## Nusselt Number

Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 94**

Nutkie, M. S. Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**

## Nylon Carpet Yarns

Stabilization of Crimp in Bulk Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Je 92**

Nypan, L. J. Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) (A) **Je 96**

## O

Oakley, D. J. Closed Loop In-Reactor Assembly (CLIRA)—A Fast Flux Test Facility Test Vehicle (78-WA/NE-6) (A) **Mr 88**

Oba, F. Optimum Structural Design Under Constraint on Failure Probability (79-DET-114) (A) **D 106**

Oberlander, G. Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **Ji 90**

Obert, E. F. Economic Sizing of Steam Piping and Insulation (78-WA/Enr-9) (A) **Je 93**

Obidinski, E. S. Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Ji 104**

## Objectivity

Objective: Objectivity (C) **Je 40**

## Occupational Safety & Health Administration

OSHA—New Directions **F 78**

## Ocean Engineering

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**

Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) (A) **F 130**

Design for Remote Work in the Deep Ocean (78-WA/OCE-4) (A) **F 130**

Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**

Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**

## Ocean Mining

Ocean Mining Operations (IF) **Ji 54**

Offshore Technology Conference—Another World (NR) **Ji 56**

## Ocean Systems

Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**

## Ocean Thermal Energy

Aloha OTEC (ES) **Ap 21**

## Ocean Thermal Energy Conversion

Conceptual Design of Large Heat Exchangers for Ocean Thermal Energy Conversion (78-WA/HT-32) (A) **Mr 95**

Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**

Heat Exchangers for OTEC (ES) **My 20**

Ocean Thermal Energy Conversion (EN) **O 84**

Ocean Thermal Plants: Heat Exchangers Key Problem (BTR) **Ag 49**

## Ocean Thermal Energy Conversion System

A Comprehensive Energy Analysis Applied to and Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**

## Ocean Thermal Energy Power Plants

The Use of Heat Exchangers with Thermoexcel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**

## Ocean Thermal Plant

Ocean Thermal Plant (BTR) **Je 51**

## Ocean Waves

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**

## Oceanographic Satellites

Earth Terrain Contouring by Satellite (BTR) **Mr 52**

Odgers, J. Acoustic Control of the Exit Plane Thermodynamic State of a Combustor (79-GT-180) (A) **Ag 100**

The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**

Odell, E. I. An In-Field Method for the Determination of the Normal Plastic Anisotropy (R) Value for Sheet Materials (78-WA/Prod-41) (A) **Je 90**

Optimization of Die Profiles for Deep Drawing (79-DET-1) (A) **N 109**

O'Donnell, W. J. Plastic Design of Ligaments (79-PVP-37) (A) **Ag 106**

## OE Spinners

Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) (A) **Je 92**

## Off-Design Correlation

An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Je 96**

## Office of Technology Assessment (OTA)

OTA Sets Priorities (NR) **Ap 62**

## Offshore Applications

Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Ji 96**

## Offshore Drilling

... And So Is OTEC (ES) **Je 18**

Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**

Mobile Drilling Platform (IF) **Ap 61**

## Offshore Oilfield Development

Characteristics of a Dry, Subsea Well Completion (78-Pet-41) (A) **F 124**

## Offshore Oil Wells

Selection of Sizing of Velocity Actuated Subsurfaces Safety Valves (78-Pet-8) (A) **Je 97**

## Offshore Production

Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**

## Offshore Projects

Fabrication and Installation of Production Platforms in Shallow Open Sea Areas: A New Concept (78-Pet-70) (A) **F 127**

Offshore NGL Recovery Project (IF) **O 52**

## Offshore Research Platform

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**

## Offshore Structures

Ice Flow Induced Structural Vibrations (78-Pet-21) (A) **Je 98**

A Pseudo-Random Noise Generator for Dynamic Response Testing of Offshore Structures (79-DET-42) (A) **N 112**

## Offshore Technology

Offshore Technology Conference—Another World (NR) **Ji 56**

## Offshore Turbines

Undersea Turbines (BTR) **Ji 49**

Ogasawara, M. Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**

Ohnishi, K. Acoustic Emission Testing During a Burst Test

of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

**Ohshio, Y.** Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

**Oil**

Burning Crude Oil Without Pollution (BTR) **D 81**

The Difficulties in Phasing Out Oil (ES) **F 24**

Lotin Petrochemical Industry (IF) **My 58**

A Matter of Survival (C) **O 41**

Squeezing Oil Out of a Stone (NB) **D 75**

SRI President Sees Hope in Energy Crunch (NRI) **My 60**

**Oil Consumption**

Development of Oil Content Monitors for Navy Ships (79-ENAs-42) (A) **O 90**

**Oil Content Monitors**

Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**

**Oil Exploration**

Seismic Survey Ship (IF) **Je 59**

**Oil Field Equipment**

China and USSR Buying More Oil Field Equipment (NB) **Ap 84**

**Oil Film Thickness**

Development of a Laser Fluorescence Technique For Measuring Piston Ring Oil Film Thickness (79-Lub-2) (A) **D 102**

Progress in Understanding and Control of Ring Lubrication (78-DGP-25) (A) **Ja 89**

**Oil Films**

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**

**Oil Imports**

The National Energy Plan and Solar Energy Technology (78-TS-2) (A) **F 129**

**Oil Levels**

Optimum Oil Level for Small Gear Boxes (79-DET-50) (A) **N 113**

**Oil Mixtures**

Nucleate Boiling Performance of Refrigerants and Refrigerant-Oil Mixtures (79-HT-79) (A) **N 105**

**Oil Production**

Stretching Our Crude Oil Reserves **S 79**

**Oil Recovery**

An Oil Bonanza (ES) **N 33**

Oil's Well That Ends Well (BTR) **Ap 51**

**Oil Reprocessing**

Reprocessing Waste Oil (ES) **Ap 21**

**Oil Savings**

Cogeneration Produces Savings (BTR) **Ap 51**

**Oil Shale**

Another Go at Oil Shale (ES) **S 21**

Conceptual Design of Combined In Situ and Surface Retorting of Oil Shale (79-PVP-72) (A) **S 99**

Heat Transfer in a Bottom Burning Oil Shale Retort (79-HT-3) (A) **O 92**

Oil Shale Utilization Method (IF) **O 52**

Still Hope for Oil Shale (ES) **Ja 19**

**Oil Shale Development**

New Prospects for Shale Oil (ES) **Ap 20**

**Oil Shale Processes**

Needed: New Oil Shale Processes (ES) **S 20**

**Oil Shortage**

Call for Conservation from DOE (C) **Ap 44**

**Oil Squeeze Film Dampers**

Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Jl 98**

**Oil Storage**

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 126**

**Oil/Water Separation**

A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAs-26) (A) **O 89**

**Oil Wells**

The Effects of H<sub>2</sub>S on Engineering Design of Oil and Gas Wells and Facilities (78-Pet-5) (A) **Ja 97**

Permeability Near Oil Wells (BTR) **My 58**

Predicting Temperatures in Flowing Oil Wells (78-Pet-9) (A) **Ja 97**

The Ultimate Control Problem—A Wild Oil or Gas Well **Je 20**

**Okada, H.** Reliability Analysis of Truss Structures by Using Matrix Method (79-DET-113) (A) **D 106**

**Okelah, R.** The Co-Turboshaft—A Novel Gas Turbine

Power Plant for Heavy Equipment (79-GT-132) (A) **Jl 96**

**Okabe, S.** Study of Vibratory Feeder with Repulsive Surface Having Directional Characteristic (79-DET-27) (A) **N 111**

**Olander, D. R.** Overview of Fuel Element Design **Ap 38**

**Olanunbosun, O. A.** Realistic Prediction and Control of Vehicle Noise Resulting from Road Inputs (79-DET-75) (A) **N 116**

**Olcott, T. M.** Development of a Space Shuttle Plant Growth Unit (79-ENAs-19) (A) **O 87**

**Olessey, R. A.** Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

**Oliver, L.** Problems of Piping Networks Supplied from Cogeneration Power Plants (79-PVP-66) (A) **S 98**

**Olson, B. A.** Experimentally Determined Catalytic Reactor Behavior and Analysis for Gas Turbine Combustors (79-GT-150) (A) **Ap 100**

**Olzowski, M.** Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**

**On-Board Flywheel Storage**

Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

**"On-Engine" Control**

Practical "On-Engine" Microprocessor Control and Monitoring Systems for Gas Turbines (79-GT-181) (A) **Jl 103**

**On-Site Performance Monitoring System**

A Low-Cost, On-Site Performance Monitoring System (79-GT-21) (A) **Je 99**

**One-Dimensional Minimization**

A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) (A) **Mr 87**

**Onset Speeds**

Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) **N 115**

**Oore, M.** Estimation of Stress Intensity Factors for Embedded Irregular Cracks Subjected to Arbitrary Normal Stress Fields (79-PVP-90) (A) **S 100**

**Oosthuizen, P. H.** Combined Convective Heat Transfer From Vertical Cylinders in a Horizontal Flow (78-WA/HT-45) (A) **Mr 96**

**Opdyke, Jr., G.** The Effect of a Sample Lot of Fuel Injectors on Emissions Levels of a Small Gas Turbine (79-GT-165) (A) **Jl 101**

**Opel, A. E.** Closed Loop Source Monitoring Saves Energy (78-WA/APC-6) (A) **Ap 103**

**Open-Cycle Turbines**

The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**

Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Jl 103**

Laser-Particle Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Jl 102**

**Open Cycles**

Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Jl 97**

**Open Ocean Farming**

Prospects for Farming the Open Ocean (79-Sol-32) (A) **Ag 96**

On Air Conditioning With Photovoltaics (79-Sol-26) (A) **Ag 95**

**Operating Objectives**

Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Ja 97**

**Operating Procedures**

Panel on Nuclear Safety (ES) **S 21**

Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**

**Operating Range**

Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Je 100**

**Operating Rules Analysis**

Analysis of Operating Rules in a Computerized Manufacturing System (78-WA/Prod-38) (A) **My 102**

**Operational Evaluation**

Operational Evaluation of Freeze Conditioning Agent: Winter 1978-79 (79-IPC-Fu-3) (A) **D 102**

**Operational Reliability**

Models for Software Reliability (78-WA/Aero-18) (A) **Ap 101**

**Optical Analysis**

Optical Analysis of Porous Metal Bearings (78-Lub-29) (A) **Ja 96**

**Optical Application**

Laser Light Microprobe (BTR) **Ap 56**

**Optical Fibers**

Fiber Optics Link Manufacturing Processes with Computers (BTR) **D 63**

**Optical Gyroscopes**

Optical Gyroscope (BTR) **Ja 48**

**Optical Interferometry**

Effects of Asperities in Elastohydrodynamic Lubrication (79-Lub-6) (A) **D 102**

**Optical Power**

Laser Experiments Achieve High Fuel Compression (BTR) **S 58**

**Optical Probes**

Response Characteristics of Optical Probes (78-WA/HT-3) (A) **Mr 92**

**Optical Scanner**

Automated Inspection of Wire-Frame Assemblies (BTR) **Jl 43**

**Optical Scanning Procedure**

Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Ja 93**

**Optical Study**

An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**

**Optics**

Energy-Saving Optics (BTR) **Mr 48**

**Optimal Adaptive Control**

Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**

**Optimal Area Allocation**

Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**

**Optimal Control**

Estimation Theory and its Role in Optimal Control (78-WA/DSC-2) (A) **Ap 93**

Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

Optimal Control of Turbine Engines (78-WA/DSC-33) (A) **Ap 99**

A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**

**Optimal Control Concepts**

Optimal Control Concepts for the Characterization and Design of Highway Vehicle—Trailer Systems (78-WA/DSC-27) (A) **Ap 96**

**Optimal Control Solution**

Optimal Control Solution of the Automotive Emission-Constrained Minimum Fuel Problem with a Driveability Constraint (78-WA/DSC-25) (A) **Ap 95**

**Optimal Design**

The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Jl 96**

**Optimal Group Scheduling**

Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**

**Optimal Preview Control**

Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 98**

**Optimal Replacement**

Reliability and Optimal Replacement via Coefficient of Variation (79-DET-108) (A) **D 106**

**Optimal Standard**

An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 96**

**Optimal State-Estimation**

Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) (A) **Ap 99**

**Optimal Tube Spacing**

On the Optimal Tube Spacing For Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**

**Optimization**

Consideration of Condenser Height in the Optimization of Power Plant Condensers (79-JPGC-Pwr-2) (A) **D 97**

Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-6) (A) **Ja 93**

Fuel Optimization (ES) **F 25**

Interaction Curves as a Tool in Optimization and Decision Making (79-DET-3) (A) **N 109**



Interactive Computer Methods for Design Optimization (78-DET-84) (A) **Ja 90**

Large System Optimization Using Decomposition with Soft Specifications (79-DET-99) (A) **D 105**

Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**

Optimization of Aircraft Undercarriages (79-DET-89) (A) **D 104**

Optimization of Die Profiles for Deep Drawing (79-DET-1) (A) **N 100**

The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**

Optimization of Large Heat Pipe Radiators for Long Life Space Heat Rejection Systems (79-ENAs-25) (A) **O 88**

The Optimization of Machine Tool Parameters by Direct Measurement (79-DET-102) (A) **D 105**

Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**

Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ji 98**

On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**

Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**

A Procedure for Axial Blade Optimization (78-WA/GT-15) (A) **Ap 90**

**Optimization Methods**

Note on Comparison of Nonlinear Optimization Methods (79-DET-118) (A) **D 107**

**Optimization Techniques**

Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) (A) **Mr 84**

**Optimum Blade Life**

Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 90**

**Optimum Control Law**

A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**

**Optimum Design**

An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Ji 91**

Optimum Design of Air-Conditioned Buildings (79-DET-119) (A) **D 107**

Regional Monotonicity in Optimum Design (79-DET-97) (A) **D 105**

**Optimum Fuel Savings**

In Search of Optimum Fuel Savings (78-WA/Enr-1) (A) **Je 92**

**Optimum Internal Finning**

Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Ji 99**

**Optimum Oil Level**

Optimum Oil Level for Small Gear Boxes (79-DET-50) (A) **N 113**

**Optimum Shape**

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**

**Optimum Structural Design**

Optimum Structural Design Under Constraint on Failure Probability (79-DET-114) (A) **D 106**

**Oran, F. M.** Design of Air-Cooled Jet Engine Testing Facilities (79-GT-1ar-5) (A) **O 82**

**Oranratnachai, A.** Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**

**Orbital Program**

Design of a One-Year Lifetime, Spaceborne Superfluid Helium Dewar (79-ENAs-23) (A) **O 88**

**Orbital Service Module**

Orbital Service Module Thermal Control System Design (79-ENAs-22) (A) **O 88**

Cooling a Radioisotope Power Source in the Space Shuttle Orbiter (79-ENAs-44) (A) **O 90**

**Orbiters**

EDC-A Regenerable CO<sub>2</sub> Removal Subsystem for an Enhanced Capability Orbiter (79-ENAs-34) (A) **O 89**

Exotic Tiles Solve Shuttle Reentry Problem (BTR) **My 48**

Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**

**Orbiting Spacecraft**

Space Robot (BTR) **Ja 41**

**Orchard, D. F. (author)** Concrete Technology: Vol. 1-Properties of Materials (CB) **S 111**

**Ordered Failures**

A Distribution-Independent Plotting Rule for Ordered

Failures (79-DET-112) (A) **D 106**

**Ores**

Treatment of Molybdenite Ore Using a 2-kW Solar Furnace (79-Sol-22) (A) **Ag 94**

**Organic Droplets**

Characteristics of a Liquid-Liquid Fluidized Heat Exchanger (79-HT-90) (A) **N 105**

**Organic Rankine Cycle System**

Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Enr-6) (A) **Je 93**

**Organic Rankine Engine**

Solar Rankine Engines—Examples and Projected Costs (79-Sol-3) (A) **Ag 92**

**Organizational Changes**

Organizing ASME For The 1980s—A Proposed Scenario **S 46**

**Orifice Flowmeter Tests**

The Stoliz and ASME-AGA Orifice Equations Compared to Laboratory Data (78-WA/FM-2) (A) **Mr 92**

**Orifices**

An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **Mr 95**

Ocean Mining Operations (FF) **Ji 54**

**Orthogonal Vibration Modes**

An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **Ji 98**

**Orthotropic Rectangular Plates**

Natural Frequencies of Clamped Orthotropic Rectangular Plates With Varying Thickness (78-WA/APM-9) (A) **My 104**

**Orthotropics**

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) (A) **Mr 98**

**Orthotropy**

Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-18) (A) **N 110**

**Orthwein, W. C.** Computer Graphics in Machine Design (79-DE-8) (A) **Ag 101; A New Key and Keyway Design (78-WA/DE-7) (A) Mr 85**

**Ortolano, R. J.** A Power Company's Approach to Improved Steam Turbine Availability (78-WA/Pwr-1) (A) **Mr 90**

**Oruh, S. N.** The Flow Control Properties of a Specially Designed Tee-Joint (78-WA/DSC-5) (A) **Ap 94**

**Osborn, C.** The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**

**Oscillating Airfoils**

Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Ji 99**

**Oscillating Forces**

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) **Ja 93**

**Oscillating Loaded Cascades**

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Ji 96; Part II—Stability and Flutter Boundaries (79-GT-112) (A) Ji 97**

**Oscillating Singularities**

A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) (A) **Je 93**

**Oscillations**

Distinctions Between Two Types of Self Excited Gas Oscillations in Vaneless Radial Diffusers (79-GT-58) (A) **Ji 92**

A Stability Criterion for the Occurrence of Thermally Induced Oscillations in Steady Laminar Flow (79-HT-74) (A) **N 105**

**Oscillators**

Proximity Spectra of Oscillators Under Random Excitation (79-DET-80) (A) **N 116**

**Osperly, L. T.** Investigation of Process and System Design Variables for Catalytic Combustion of Low-Btu Gas (79-GT-66) (A) **Ag 98**

**Oshima, R.** NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**

**Ostrach, S.** Turbulent Co-Current Gas-Liquid Flow in a Tube with and without Swirl (79-FE-11) (A) **O 85**

**Othmer, D. F.** Earth + Water + Air = Fire: The Wet Air Oxidation (WAO) of Wastes **D 30**

**Ott, E. D.** Elections to Fellow Grade **F 120**

**Ottawa Townhouses**

Ottawa Townhouses Heated by Solar Energy (BTR) **N 64**

**Ottenslein, A. S.** Electronic Line Break Controls for Gas Pipelines (78-Pet-52) (A) **F 126**

**Outgassing Process**

The Earth Burps Methane... (BTR) **Ji 41**

**Overhung Rotor**

Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Ji 99**

**Overland Belt Conveyor Systems**

Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MH-7) (A) **My 98**

**Overspeed Test Program**

An Overspeed Test Program in a Petrochemical Plant (78-DGP-27) (A) **Ja 89**

**Owen, H. R.** The Trouble with Kites (C) **Ag 43**

**Oxidation**

Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**

**Oxidation Concept**

A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Ji 102**

**Oxidation Process**

Earth + Water + Air = Fire: The Wet Air Oxidation (WAO) of Wastes **D 30**

**Oxidizing Monolith**

The Segmented Oxidizing Monolith Catalytic Converter—Theory and Performance (79-HT-55) (A) **N 103**

**Ozilik, M. N.** An Iterative Solution for Anisotropic Radiative Transfer in a Slab (79-HT-23) (A) **O 94**

**Ozone-UV Treatment**

Ozone-UV Treatment for Oily Wastewater Cleanup (79-ENAs-39) (A) **O 90**

**P**

**Pacemakers**

Pacemaker Function Analyzer (IF) **Ag 54**

**Page, R. H.** Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Ja 89**

**Paget, J. A.** Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ji 97**

**Pagni, P. J.** Laminar Wake Flame Heights (79-HT-68) (A) **N 104**

**Paldousis, M. P.** Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) (A) **My 105; Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) (A) S 105; Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 2: Experiments (79-APM-4) (A) S 105**

**Pajouhi, K.** Fabrication and Installation of Production Platforms in Shallow Open Sea Areas: A New Concept (78-Pet-70) (A) **F 127**

**Pal, D.** Three-Dimensional Thermal Convection Produced by Two-Dimensional Thermal Forcing (79-HT-109) (A) **N 108**

**Palmer, M. E.** The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**

**Palmeter, S. B.** Power Plant Capital Costs—What's Behind the Upward Climb? (79-PVP-87) (A) **S 100**

**Pandey, P. C.** Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 99**

**Pandit, S. M.** Application of Data Dependent Systems to Diagnostic Vibration Analysis (79-DET-7) (A) **N 109; Reliability and Optimal Replacement via Coefficient of Variation (79-DET-108) (A) D 106**

**Pandolfi, M.** Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) (A) **Ap 89**

**Panels**

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) (A) **Mr 90**

**Pang, Yuan** An Analysis of Heat Transfer in a Turbulent Heat-Generating Flow with High Prandtl Numbers (79-HT-114) (A) **N 108**

**Panzera, C.** Bonding Ceramic Materials to Metallic Substrates for High-Temperature Low-Weight Applications (78-WA/GT-16) (A) **Ap 90**



- Papalambros, P.** Global Noniterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) (A) **Mr 86**; Regional Monotonicity in Optimum Design (79-DET-97) (A) **D 105**
- Paper Mills**  
Focusing on Paper Mills (ES) **Ja 19**
- Paper Plant Parameters**  
Multivariable Identification of Some Paper Plant Parameters (78-WA/DSC-4) (A) **Ap 94**
- Parabolic Reflector**  
High-Temperature Solar Converter (BTR) **Ja 44**
- Parallel-Flow Stability Analysis**  
Nonparallel Effects on the Stability of Jet Flows (78-WA/APM-16) (A) **My 104**
- Parallel Manufacturing Systems**  
Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**
- Parallel Plates**  
Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Je 89**
- Parallel Tubes**  
Contact Conductance Between Parallel Tubes (79-HT-85) (A) **N 106**
- Parallel Walls**  
The Effect of Spacing on the Turbulent Burning of Vertical Parallel Walls (79-HT-26) (A) **O 93**
- Parameter Monitoring**  
Parameter Monitoring for Corrosion Control in Gas Turbines (79-JPGC-GT-1) (A) **D 98**
- Parameter Systems**  
A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 96**
- Parameter Techniques**  
Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**
- Parameter Variation**  
Amplitude Modulation of Forced System by Parameter Variation (79-APM-8) (A) **S 106**
- Parametric Amplifier**  
Clamped Beam Parametric Amplifier (79-APM-9) (A) **S 106**
- Parametric Analysis**  
Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**
- Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System (78-DGP-5) (A) **Ja 86**
- Parametric Excitation**  
Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) (A) **Mr 85**
- Parametric Excited Nonlinear System**  
Stationary Response of a Randomly Parametric Excited Nonlinear System (78-WA/APM-13) (A) **My 103**
- Parametric Studies**  
Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**
- Stresses in Elbows Created by Supporting Lug Load (79-PVP-51) (A) **S 97**
- Parihar, K. S.** The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) (A) **S 108**
- Parin, M. L.** Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**
- Park, K. C.** A Variable-Step Central Difference Method for Structural Dynamics Analysis—Part I: Theoretical Aspects (79-PVP-120) (A) **S 103**; Part II: Implementation and Performance Evaluation (79-PVP-121) (A) **S 104**
- Parker, D. A.** Progress in Understanding and Control of Ring Lubrication (78-DGP-25) (A) **Ja 89**
- Parker, J. S.** Elections to Fellow Grade **O 80**
- Parkins, D. W.** Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) **Ja 93**
- Parkinson, A. G.** An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Ji 101**
- Parks, P. C.** Stability of Liquid-Filled Spinning Spheroids Via Liapunov's Second Method (79-APM-12) (A) **S 106**
- Parsons, J. D.** Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**
- Parson, J. R.** Twistless Yarns and Woven Fabrics Made Therefrom (79-Tex-4) (A) **D 99**
- Part-Circular Cracks**  
Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**
- Part-Span Dampers**  
An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Je 98**
- Partial Admission Turbines**  
Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ji 98**
- Partial Coherence**  
Some Formulae for the Multiple and Partial Coherence Problem (79-DET-33) (A) **N 112**
- Partial Oxidation**  
A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Ji 102**
- Particle Size Analysis**  
Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**
- Particulate Control**  
Laser-Particulate Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Ji 102**
- Particulate Distribution**  
Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**
- Particulate Emissions**  
Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Ji 104**
- Evaluation of Particulate Emissions from Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**
- Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project (78-DGP-29) (A) **Ja 89**
- Particulate Emissions Reduction**  
An Emissions First (ES) **Ja 18**
- Particulate Evaluation**  
Design Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**
- Particulate Formation**  
Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT/Isr-12) (A) **O 83**
- Particulate Loading**  
Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**
- Particulate Material**  
Physical Characterization of Particulate Materials from a Turbine Engine (79-GT-179) (A) **Ji 102**
- Particulates**  
EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-18) (A) **Ja 98**
- Parts Production**  
Automatic Hot Forging for Parts Production (BTR) **N 68**
- Paschalis, V.** Elections to Fellow Grade **F 121**
- Passenger Cars**  
Electric Vehicle Demonstration (ES) **Ji 20**
- Passenger Equipment Development**  
Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Cars and Equipment (78-WA/RT-14) (A) **My 93**
- Passenger Railcar**  
Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**
- Passenger Safety**  
Air Bag—A Health Threat? (BTR) **Ja 41**
- Passenger Trains**  
Conventional Versus Self-Steering Radial Trucks for High-Speed Passenger Trains (79-RT-3) (A) **Ag 98**
- Passenger Vehicles**  
Advanced Electric Car (BTR) **O 44**
- Passenger Vessels**  
Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**
- Passerello, C. E.** Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**
- Passive Graphics**  
A Passive Graphics Program for General Finite Element Analyses (79-PVP-20) (A) **Ag 105**
- Passive Restraints**  
Air Bag—A Health Threat? (BTR) **Ja 41**
- Passive Solar Heating System**  
Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**
- Passive Solar House**  
Award-Winning Passive Solar House (BTR) **Je 47**
- Patadia, S.** The Investigation of Locomotive Dynamics via a Large Degree of Freedom Modeling (79-RT-1) (A) **Ag 96**
- Patel, A. S.** Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Ji 92**
- Patel, M. R.** Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**
- Patents**  
What Every Engineer Should Know About Patents (CB) **D 109**
- Pathogenic Sex Lure**  
Insect Control via Pathogenic Sex Lure (BTR) **Ji 43**
- Patir, N.** Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) (A) **Ja 95**
- Pahle, E. J.** Steady-State Temperature Distribution in a Rotating Rotor Subject to Surface Heat Fluxes and Convective Cooling (79-HT-60) (A) **N 104**; The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/Prod-18) (A) **My 98**
- Palwardhan, A. G.** Technology Transfer in Biokinematics of Human Spine (78-DET-88) (A) **Ja 90**
- Paul, D. B.** Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**
- Paul, F. W.** An Analytical and Experimental Investigation of a Rotating Boiler (79-HT-33) (A) **O 84**
- Paulus, J. D.** Elections to Fellow Grade **Ji 88**
- Pavelic, V.** Computer Simulation and Design of the Control System for a Wind Turbine Generator (79-DE-9) (A) **Ag 102**; Design Improvement of a Friction Brake Plate Through Finite Element Analysis (79-DE-18) (A) **Ag 103**; Generating Ductile Iron Fatigue Data with a Calibrated Tuning Fork System (79-DE-11) (A) **Ag 102**; A Study of Induction Hardening Hole Surfaces in Clearance Fit Joints to Improve Fatigue Strength (79-DE-10) (A) **Ag 102**
- Pascock, B.** Power Station Experience with Retrofitted Programmable Fuel Management and Sequencing Controllers for Aero-Derivative Gas Turbine (79-GT-191) (A) **Ag 100**
- Pascock, R. E.** Compressor Response to Spatially Repetitive and Non-Repetitive Transients (79-GT/Isr-14) (A) **O 83**; Compressor Rotating Stall in Uniform and Non-Uniform Flow (79-GT/Isr-18) (A) **O 84**; A General Solution for Distorted Flow in Cascades of Aerofoils (79-GT-65) (A) **Ji 93**
- Pearson, J.** Elections to Fellow Grade **F 121**
- Pearson, R. J.** Aerospace Systems Analysis Approach to Energy Conservation in Heating, Ventilating and Air Conditioning Systems (79-ENAs-1) (A) **O 88**
- Peckover, R. S.** Directional Dependence and Non-Uniformity of Joule Heating in Natural Convection Experiments (79-HT-96) (A) **N 106**
- Pedersen, E. S.** (author) Nuclear Power, Volume 1—Power Plant Design, and Volume 2—Project Management (TL) **My 108**
- Petley, R. K.** An Alcohol Fuel Alternative **N 52**
- Pellets**  
Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) (A) **Mr 84**
- Pemberton, J. C.** An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**
- Pennick, H. G.** Development of an Automated Life Prediction System for Steam Turbine Rotors (78-WA/DE-15) (A) **Mr 88**
- Pensions**  
ASME Members and Pensions (PS) **Je 73**
- Pensions and Retirement—Are You Prepared? (NR)** **Ji 84**
- Penstocks**  
Hydro Plant Penstocks (IF) **N 74**
- Pepper, D. W.** Numerical Solution of Three-Dimensional Natural Convection by the Strongly Implicit Procedure (78-WA/HT-10) (A) **Mr 93**
- Peppin, R. J.** Energy Conservation (C) **F 55**
- Perception Gap**  
Kaiser Congratulated (C) **Je 45**
- Soviet Technology: The Perception Gap **Ap 22**
- Pierchard, R. J.** Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some At-

- tributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**
- Perfect, N.** Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**
- Perforated Plates**  
Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-82) (A) **Ag 106**
- Performance Analysis**  
Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**
- Performance Appraisal**  
Employee Performance Appraisal (78-WA/Mgt-1) (A) **Ja 90**
- Performance Capability**  
A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Ji 103**
- Performance Characteristics**  
Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Ja 98**  
Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Ja 100**
- Performance Coefficients**  
Relationships for Nozzle Performance Coefficients (79-GT-145) (A) **Ji 101**
- Performance Comparison**  
A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Enr-3) (A) **Ja 92**
- Performance Considerations**  
Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**
- Performance Correlations**  
Performance Correlations for Flat and Conical Diffusers (79-GT-52) (A) **Ji 91**
- Performance Curves**  
Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Ji 96**
- Performance Data**  
The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) (A) **Ja 98**  
Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Ja 95**
- Performance Degradation**  
Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Ji 104**
- Performance Determination**  
Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.77-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Ji 91**
- Performance Estimation**  
Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ji 98**
- Performance Evaluation**  
Employee Performance Appraisal **Ji 32**  
Energy-Conserving Cogeneration-Performance, Economics and Legislation (78-WA/Enr-5) (A) **Ja 92**  
An Energy-Saving Appliance (ES) **Ji 20**  
The Growth and Evolution of the TPE331 (79-GT-164) (A) **Ji 101**  
Operation of GT-225 Diffusion-Flame Combustor on Alternative Fuels Performance, Durability and Emissions (79-GT-138) (A) **Ji 92**  
Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Ja 98**  
A Variable-Step Central Difference Method for Structural Dynamics Analysis—Part II: Implementation and Performance Evaluation (79-PVP-121) (A) **S 104**
- Performance Improvement**  
The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**  
Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ag 94**  
A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **Ji 105**
- Performance Measurement**  
Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Ji 95**  
Measurement of Performance in an Engineering Environment (78-WA/Mgt-8) (A) **Ja 91**
- Performance Measurement Systems (PMS)**  
PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Ja 91**
- Performance Measurements**  
Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**
- Performance Optimization**  
A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Ja 96**
- Performance Prediction**  
Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**  
Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Ja 98**
- Performance Requirements**  
Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**
- Performance Simulation**  
Dynamics of Rolling Element Bearings Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) **Ja 96**
- Performance Standard**  
The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**
- Performance Study**  
Fuel Property Effects on Combustor Performance (79-GT-178) (A) **Ji 102**
- Performance Test Codes**  
ASME Performance Test Codes and Their Relationship to Plant Testing and Thermal Performance Analysis **Ap 105**  
Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) (A) **Mr 90**
- Performance Testing**  
Design Audit, Testing and Commissioning of Two 9000 HP Centrifugal Air Compressor Trains (78-Pet-48) (A) **F 125**
- Performance Tests**  
Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance (78-Pet-26) (A) **F 122**  
Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **Ji 102**
- Perleman, A. B.** The Application of Component Mode Synthesis to Covered Groups of Blades (79-DET-92) (A) **D 104**
- Perleman, D. (recipient)** Ralph Coats Roe Medal **Ja CR-13**
- Permeability**  
Permeability Near Oil Wells (BTR) **My 50**
- Pershing, D. W.** Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**
- Personality Speaking**  
On Winning Friends and Influencing People (PS) **Ag 69**
- Personnel Training**  
Boiler Plant Accidents—Four Case Histories (78-Pet-46) (A) **F 125**  
Simulators to Train Nuclear Plant Personnel (BTR) **O 45**
- Perrone, H.** Elections to Fellow Grade **O 81**
- Perturbation Theory**  
The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ji 103**
- Peterka, J. A.** Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Ja 88**
- Peters, A. R.** Heat Transfer Mechanisms Near Horizontal Heat Exchange Tubes in an Air Fluidized Bed of Uniformly Sized Glass Particles (79-HT-88) (A) **N 106**
- Peters, D. A. (recipient)** Pi Tau Sigma Gold Medal **Ja CR-12**
- Petrick, N. A.** Standardization as a Means of Reducing Power Plant Costs (79-PVP-108) (A) **S 102**
- Petrobras Subsea Manifold Center**  
Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**
- Petrochemical Plant**  
An Overspeed Test Program in a Petrochemical Plant (78-DGP-27) (A) **Ja 89**
- Petrochemical Industry**  
Lotin Petrochemical Industry (IF) **My 58**
- Petroleum**  
OPEC—Meet UTEC (C) **Ji 40**
- Petroleum Engineering**  
Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance (78-Pet-26) (A) **F 122**  
The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-76) (A) **F 128**
- Petroleum Engineering**  
Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**  
Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 99**  
Annular Geometry—Its Effect on Kick Tolerance (78-Pet-63) (A) **F 127**  
Art of Pipeline Pigging (78-Pet-74) (A) **F 127**  
Basis of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**  
Boiler Plant Accidents—Four Case Histories (78-Pet-46) (A) **F 125**  
A Boiler Without Water Is... (78-Pet-19) (A) **Ja 98**  
Can Nozzle Design be Effectively Improved for Drilling Purposes (78-Pet-51) (A) **F 125**  
Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**  
Catalytic Reduction of Nitrogen Oxides Emitted from Stationary Sources (78-Pet-29) (A) **F 122**  
Characteristics of a Dry, Subsea Well Completion (78-Pet-41) (A) **F 124**  
Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Ja 98**  
A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**  
Considerations for the Purchase of Gas Gathering Compressors (78-Pet-20) (A) **Ja 98**  
Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**  
Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) (A) **F 127**  
Deepwater Production Risers (78-Pet-13) (A) **F 122**  
Design Audit, Testing and Commissioning of Two 9000 HP Centrifugal Air Compressor Trains (78-Pet-48) (A) **F 125**  
Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**  
Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**  
Development of Deviation Control Tool (78-Pet-58) (A) **F 126**  
Development of Liquid Fuel System for Extended Operation of Industrial Gas Turbines (78-Pet-4) (A) **Ja 97**  
Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**  
Drillhole Stimulation in Iceland (78-Pet-24) (A) **Ja 98**  
Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**  
Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery Systems (78-Pet-3) (A) **Ja 97**  
Economics of Wind Generated Power (78-Pet-80) (A) **F 128**  
Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**  
Effects of Clean Air Act Amendments of 1977 on Construction or Modification of Natural Gas Processing Plants (78-Pet-10) (A) **Ja 97**  
The Effects of H<sub>2</sub> on Engineering Design of Oil and Gas Wells and Facilities (78-Pet-5) (A) **Ja 97**  
The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**  
Electronic Line Break Controls for Gas Pipelines (78-Pet-52) (A) **F 126**  
Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Ja 98**  
Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**  
EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-18) (A) **Ja 98**  
Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**  
Fabrication and Installation of Production Platforms in Shallow Open Sea Areas: A New Concept (78-Pet-70) (A) **F 127**  
Failure of Inclined Boreholes (78-Pet-44) (A) **F 124**  
Fuel Oil Additives to Promote Cleanliness, Preserve Equipment and Reduce (78-Pet-27) (A) **Ja 99**  
Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**  
Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) (A) **F 127**  
Geothermal Stimulation with Chemical Explosives

- (78-Pet-67) (A) **F 127**  
 Hot Tapping of Ethylene Pipelines (78-Pet-1) (A) **Ja 97**  
 Ice Ice Induced Structural Vibrations (78-Pet-22) (A) **Ja 98**  
 Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) (A) **Ja 98**  
 In-Situ Measurement of the Mechanical Properties of Sea Ice (78-Pet-15) (A) **Ja 98**  
 Kine-Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Ja 99**  
 The Kinetics of Ironite Sponge H<sub>2</sub>S Reactions (78-Pet-76) (A) **F 127**  
 The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**  
 Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 98**  
 Metallurgical Studies of Deepwater Pipeline Laid By Reeled Pipe Method (78-Pet-55) (A) **F 126**  
 Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**  
 Multimode Leak Detection System (78-Pet-53) (A) **F 125**  
 National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 126**  
 A New Proppant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**  
 Operating Experience with Marine Riser Buoyancy (78-Pet-56) (A) **F 126**  
 A Perspective on Coal Slurry Pipelines for the Next Decade (78-Pet-65) (A) **F 126**  
 Pipeline Rupture Detection and Controls (78-Pet-54) (A) **F 126**  
 Predicting Temperatures in Flowing Oil Wells (78-Pet-9) (A) **Ja 97**  
 Preheat Temperature for Vacuum Dewatering of Sealand Bit Bearing Prior to Greasing (78-Pet-38) (A) **F 124**  
 Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**  
 A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**  
 Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**  
 Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**  
 Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Ja 97**  
 Selection and Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-8) (A) **Ja 97**  
 Solving Three Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) (A) **F 127**  
 Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 98**  
 A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**  
 A Study of Determine Roller Cone Cutter Offset Effects at Various Drilling Depths (78-Pet-23) (A) **Ja 99**  
 Subsea Chamber Design for the Dry Containment of Well-head Equipment (78-Pet-43) (A) **F 125**  
 The Techniques Involved in the Design, Construction, and Operation of a Waterflood Facility in South Louisiana Marshlands (78-Pet-7) (A) **Ja 97**  
 Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**  
 Thermoelectric Generators for Solar Energy Conversions (78-Pet-75) (A) **F 127**  
 Those Treacherous Continuous Pilots (78-Pet-45) (A) **F 124**  
 Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**  
 The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**  
**Petroleum Industry**  
 The All-Aluminum Polyframe Dome Structures: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**  
 Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**  
**Pettigrew, M. J.** Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) (A) **My 104**  
**Pieffer, W. C.** Liquid Droplet Heating and Vaporization in the Catalytic Combustor (79-HT-52) (A) **O 92**  
**Piehl, H.** Transition Procedure of Instationary Boundary Layers (79-GT-128) (A) **Ji 98**  
**Phaeodactylum Tricornutum**  
 Initial Investigations of a Shallow-Layer Algal Production System (79-Sol-34) (A) **Ag 96**  
 Production of High Value Solid Fuels from Cellulosic Feed Materials by the Koppelman Process (79-Sol-33) (A) **Ag 96**  
**Phase Change**  
 A Mixed Friction Hydrostatic Face Seal Model With Phase Change (79-Lub-5) (A) **D 102**  
**Phase Change Effects**  
 Phase Change in Liquid Face Seals Romon II-Isothermal and Adiabatic Bounds With Real Fluids (79-Lub-4) (A) **D 102**  
**Phelan, J. J.** A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) (A) **Mr 90**  
**Phillips, J. B.** Helicopter Environmental Control—Commercial and Military Solutions (79-ENAS-35) (A) **O 89**  
**Phillips, J. M.** Controlled-Environment Agricultural Systems as Food Sources for Large Space Habitats (79-ENAS-30) (A) **O 89**  
**Phosphorus**  
 Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) (A) **Ja 95**  
**Photoelectrochemical Cells**  
 Solar Cell that Works in Dark (BTR) **Ja 42**  
**Photoelectrolysis**  
 Solar Production of Hydrogen Fuel (BTR) **Ja 45**  
**Photographic Techniques**  
 Detecting Surface Deformations Photographically (BTR) **Ag 45**  
**Photosynthesis**  
 Playing with Mother Nature (ES) **N 33**  
 Reproduce Plant Chlorophyll in Lab (BTR) **N 65**  
**Photovoltaics**  
 Do Photovoltaics Have a Future? (79-Sol-7) (A) **Ag 93**  
 Field Tests of Photovoltaic Power Systems (79-Sol-10) (A) **Ag 93**  
 A Flywheel Energy Storage and Conversion System for Solar Photovoltaic Applications (79-Sol-1) (A) **Ag 92**  
 Institutional Issues and Photovoltaics (ES) **S 20**  
 An Overview of Photovoltaic Power Systems (79-Sol-12) (A) **Ag 93**  
 Photovoltaic Concentrator System Technology and Applications Experiments (79-Sol-9) (A) **Ag 93**  
 Photovoltaic Electric Power Generation from a Utility Perspective (79-Sol-18) (A) **Ag 94**  
 Production of Photovoltaic Devices (79-Sol-8) (A) **Ag 93**  
 Solar Photovoltaic Power for Residential Use (79-Sol-11) (A) **Ag 93**  
 Structural Cost Optimization of Photovoltaic Central Power Station Modules and Support Structure (79-Sol-17) (A) **Ag 94**  
 Unique Aspects of Terrestrial Photovoltaic System Design (79-Sol-14) (A) **Ag 94**  
**Physical Metallurgy**  
 Physical Metallurgy and the Design of Steels (CB) **My 107**  
**Physical Modeling**  
 Physical Modeling of Electric Glass Melting Furnaces for High Level Waste Immobilization (79-HT-97) (A) **N 106**  
**Physical Scientists' Handbook**  
 The Practising Scientist's Handbook: A Guide for Physical and Terrestrial Scientists and Engineers (CB) **F 134**  
**Physicians' Problems**  
 Doctors Who Need Doctoring (BTR) **Ap 52**  
**Physico-Mathematical Characterization**  
 Plasma-Spray Coating Processes: Physico-Mathematical Characterization (79-GT-18) (A) **O 83**  
**Physics**  
 McGraw-Hill Dictionary of Physics and Mathematics (CB) **Ap 104**  
**Physiological Situations**  
 Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**  
**Phytotrons**  
 Use of Phytotrons in Assessing Environmental Requirements for Plants in Space Habitats (79-ENAS-28) (A) **O 89**  
**Picard, J. C.** Operational Evaluation of Freeze Condi-

- tioning Agent: Winter 1978-79 (79-IPC-Fu-3) (A) **D 102**  
**Pick, R. J.** Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**  
**Pickering, F. B. (author)** Physical Metallurgy and the Design of Steels (CB) **My 107**  
**Picou, J. L.** Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**  
**Piofferi, W. C.** Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**  
**Piehl, H. R. (author)** Products Liability and the Reasonably Safe Product: A Guide for Management, Design, and Marketing (CB) **F 134**  
**Piekarski, A. J.** Water-Cooled Gas Turbine Development Program Wheelbox Tests (79-GT-76) (A) **Ag 98**  
**Pierce, B. L.** Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Ji 98**  
**Pierce, B. P.** Effects of Clean Air Act Amendments of 1977 on Construction or Modification of Natural Gas Processing Plants (78-Pet-10) (A) **Ja 97**  
**Pierce, F. J.** Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Ja 89**  
**Pierre, B.** Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Ji 95**  
 Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Ji 97**  
**Pierson, E. S.** The Role of Interfacial Heat and Mechanical Energy Transfers in a Liquid-Metal MHD Generator (78-WA/HT-33) (A) **Ap 91**  
**Piezoviscous Lubricant**  
 Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**  
**Pilkey, W.** Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**  
**Pilkey, W. D.** Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) (A) **Mr 85**  
**Pillsbury, P. W.** Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Ji 99**  
**Pilot Electric Plant**  
 Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**  
**Pilot Plant**  
 Disposing of Nuclear Wastes (ES) **Ap 20**  
 NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**  
**Pilot Plants**  
 Irradiated Sludge as Cattle Feed (BTR) **S 55**  
 Ten-Megawatt Solar Facility (ES) **F 25**  
**Pilot-Scale Experiments**  
 Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Ja 97**  
**Pilot System**  
 Detergents Clean the Air (NB) **Ji 64**  
**Pimbley, W. T.** Fillet Jet in a Liquid Jet (79-FE-1) (A) **O 84**  
**Pinchak, A. C.** Turbulent Co-Current Gas-Liquid Flow in a Tube with and without Swirl (79-FE-11) (A) **O 85**  
**Pines, H. S.** Floating Dry Cooling: A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Ja 92**  
**Pinhole Camera**  
 Wide Angle Pinhole Camera (BTR) **F 57**  
**Pipe Axis**  
 The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Ja 89**  
**Pipe Elbows**  
 Numerical Evaluation of an Inelastic Piping Elbow Element (79-PVP-41) (A) **Ag 106**  
 Stresses in Elbows Created by Supporting Lug Load (79-PVP-51) (A) **S 97**  
**Pipe Flow**  
 Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) **Mr 94**  
**Pipe Supports**  
 The Use of Pre-Insulated Pipe Supports as Structural Support Members (79-PVP-47) (A) **Ag 107**  
**Pipe Welding**  
 Computer-Controlled Underwater Welding (BTR) **Mr 49**



## Pipeline Gas

Coal to Pipeline Gas (ES) **Mr 23**

## Pipeline Gas Compressors

Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **Jl 105**

## Pipeline Pigging

Art of Pipeline Pigging (78-Pet-74) (A) **F 127**

## Pipeline Rupture Detection

Pipeline Rupture Detection and Controls (78-Pet-54) (A) **F 128**

## Pipelines

Acoustic Flowmeters for Pipelines **O 28**

The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**

Basic of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**

Coal Slurry Pipelines for the Next Decade **D 38**

Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines (78-WA/MH-1) (A) **My 97**

Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-182) (A) **Jl 101**

Conceptual Design of Combined In Situ and Surface Retorting of Oil Shale (79-PVP-72) (A) **S 99**

Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**

Decompression of Gas Pipelines During Lubrication Ductile Fractures (78-Pet-69) (A) **F 127**

Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**

Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**

Electronic Line Break Controls for Gas Pipelines (78-Pet-52) (A) **F 125**

Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Jl 95**

Gas From Prudhoe Bay (NB) **Je 67**

Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) (A) **F 127**

Hot Tapping of Ethylene Pipelines (78-Pet-1) (A) **Ja 97**

Improved Coal-Slurry Pipeline (BTR) **O 46**

Metallurgical Studies of Deepwater Pipeline Laid By Reeled Pipe Method (78-Pet-55) (A) **F 126**

New Cast Steel Alloys Readied for Arctic Gas Service (BTR) **S 60**

Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**

A Perspective on Coal Slurry Pipelines for the Next Decade (78-Pet-65) (A) **F 126**

Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**

Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Jl 97**

The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**

## Pipelining

Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**

## Pipes

The Analysis of Heat Transfer with and without Condensation in a Heat Pipe Heat Exchanger (78-WA/HT-59) (A) **Ap 92**

Analysis of Pipe Whip (79-PVP-122) (A) **S 104**

An Approximate Method for the Determination of the Response Frequency of Pipe Whip (79-PVP-123) (A) **S 104**

Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

Design, Analysis, and Tests of a Shuttle-Type Heat-Pipe-Cooled Leading Edge (79-ENAs-20) (A) **O 88**

Design Considerations for CRBRP Heat Transport System Piping Operating at Elevated Temperatures (79-NE-5) (A) **S 105**

Design of Elevated Temperature Piping for Advanced Nuclear Plants (79-NE-7) (A) **S 105**

Dynamic Propagation of Circumferential Cracks in Two Pipes with Large-Scale Yielding (79-PVP-81) (A) **S 99**

The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**

Friction and Heat Transfer in Turbulent Free Swirling Flow in Pipes (78-HT-39) (A) **O 94**

Heat Transfer for Laminar, Uniform Heat Generating Fluid

Flow in a Curved Pipe (79-HT-93) (A) **N 107**

Impact of Building Design on Auxiliary Liquid Metal Piping (79-NE-8) (A) **S 105**

An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **Mr 95**

Preliminary Analysis and Screening Criteria for Elevated Temperature Piping (79-NE-6) (A) **S 105**

Relationships Between Mechanical Properties and the Extension and Arrest of Unstable Cracks in Line Pipe Steels (79-PVP-76) (A) **S 99**

Science of the Big Bend (BTR) **Jl 46**

A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 96**

## Piping

Combination of Modal Forces and Stresses in the Seismic Design of Piping Systems (79-PVP-112) (A) **S 102**

A Comparison of Fatigue Test Data on Piping with the ASME Code Fatigue Evaluation Procedure (79-PVP-92) (A) **S 100**

Determination of Stress Intensification Factors for Integrally Reinforced 45-Deg Lateral Branch Connections (79-PVP-98) (A) **S 101**

Fatigue Crack Growth in 2 1/4Cr-1Mo Steel Exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**

Fatigue Life Evaluation of Nuclear Components and Piping (79-PVP-16) (A) **Ag 104**

Fatigue Threshold Stress Intensity and Life Estimation of ASTM-A106B Piping Steel (79-PVP-86) (A) **S 100**

Pipe Supports and Restraints—Computer Designed and Drawn (79-PVP-67) (A) **S 98**

Problems of Piping Networks Supplied from Cogeneration Power Plants (79-PVP-66) (A) **S 98**

Seismic-Evaluation of Piping and Supports at Diablo Canyon Site Units 1 and 2, for the Postulated Hosgri Earthquake (79-PVP-100) (A) **S 102**

## Piping Reaction

Piping Reaction on Active and Non-Active Equipment Nozzles (79-PVP-28) (A) **Ag 105**

## Piping Supports

SUPAN—A Computer Program for the Analysis of Beam Type Piping Supports (79-PVP-19) (A) **Ag 104**

## Piping Systems

Application of Automated Design to Piping Systems: Routing and Support Location (79-PVP-44) (A) **Ag 107**

Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**

Economic Sizing of Steam Piping and Insulation (78-WA/Enr-9) (A) **Je 93**

Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**

Piranda, J. Identification of Eigensolutions by Galerkin Technique (79-DET-35) (A) **N 112**

Pirro, J. Nuclear Fuel Service Center Approach to Reducing Proliferation Potential (78-WA/NE-9) (A) **Mr 98**

Pirvica, J. A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**

Piston Design

Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**

Piston Motion

Piston Motion Influences, Measurements, Calculations (78-DGP-17) (A) **Ja 87**

Piston Pumps

Review of Liquid Piston Pumps and Their Operation with Solar Energy (79-Sol-4) (A) **Ag 92**

Piston Ring Coatings

Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 96**

Piston Ring Development

Development of Piston Rings for High Speed Engines in Europe (78-DGP-18) (A) **Ja 88**

Piston Ring Oil Film

Development of a Laser Fluorescence Technique For Measuring Piston Ring Oil Film Thickness (79-Lub-2) (A) **D 102**

Piston Rings

Piston Ring Scuffing—A Multi-Parameter Investigation (78-DGP-14) (A) **Ja 87**

Pistons

The Five Bar Reciprocating System (79-DE-1) (A) **Ag 101**

Pitkin, R. G. Solar Factors (C) **Ap 43**

Pizzali, R. L. A Dynamic, Nonlinear Finite-Element Model

of a Human Leg (78-WA/Bio-2) (A) **Mr 91**; Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**

Pis-Barby, F. E. Rotary Bed Solid Desiccant Drying: An Analytical and Experimental Investigation (79-HT-19) (A) **O 93**

Placement Survey

Survey Shows Engineering Graduates Have it Good (EN) **My 67**

Plache, K. O. Coriolis/Gyroscopic Flow Meter **Mr 38**

Planar Flexibility

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**

Planar Hydrostatic Foil Bearing

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) (A) **Ja 95**

Plane Elasticity

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**

Plane Helicostats

Design Considerations of Small Solar Collector Systems Using Plane Helicostats (79-Sol-2) (A) **Ag 92**

Planetary Gears

Planet Indexing in Planetary Gears for Minimum Vibration (79-DET-73) (A) **N 116**

Planetary Motion

Ockham's Razor and the Heliocentric Model (C) **S 50**

Plant Chlorophyll

Reproduce Plant Chlorophyll in Lab (BTR) **N 65**

Plant Construction

Effects of Clean Air Act Amendments of 1977 on Construction or Modification of Natural Gas Processing Plants (78-Pet-10) (A) **Ja 97**

Plant Conversion

Conversion of Industrial Plants to use Coal as Fuel **Jl 28**

Plant Design

Planning Industrial Plant Layouts (IF) **Jl 55**

Plant Efficiency

MHD Test Record (ES) **Jl 21**

Plant Engineering and Maintenance

Air Washer Operation with Non-Saturated Discharge and Controlled Dewpoint Conserves Energy (78-WA/PEM-3) (A) **My 95**

The Economics of Energy Management Systems in State Buildings in Florida (78-WA/PEM-1) (A) **My 95**

Energy Consumption and Conservation in University Buildings (78-WA/PEM-4) (A) **My 95**

The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**

Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**

Plant Engineers

Manufacturing—A New Image (C) **Ap 44**

Plant Interaction

Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Jl 92**

Plant Maintenance

Productivity Factors in Large Plant Maintenance (78-WA/Mgt-5) (A) **Je 31**

Plant Nutrients

Recycling Plant, Human and Animal Wastes to Plant Nutrients in a Closed Ecological System (79-ENAs-29) (A) **O 89**

Plant Safety

Nuclear Plant Safety (EN) **Jl 67**

Plant Testing

ASME Performance Test Codes and Their Relationship to Plant Testing and Thermal Performance Analysis **Ap 105**

Plasma Laser

Plasma Laser Tunable Over Wide Frequency Range (BTR) **F 60**

Plasma-Spray Coating

Plasma-Spray Coating Processes: Physico-Mathematical Characterization (79-GT/Isr-8) (A) **O 83**

Plasma Spray Process

Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 89**

Plasma Welded Coating

Development of Piston Rings for High Speed Engines in Europe (78-DGP-18) (A) **Ja 88**



### Plastic Anisotropy

An In-Field Method for the Determination of the Normal Plastic Anisotropy (R) Value for Sheet Materials (78-WA/Prod-41) (A) **Je 90**

### Plastic Deformation

Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**

### Plastic Design

Plastic Design of Ligaments (79-PVP-37) (A) **Ag 106**

### Plastic Film Thickness

Measuring Plastic Film Thickness (BTR) **D 58**

### Plastic Flow

Reverse Plastic Flow Associated With Plastic Indentation (78-WA/Prod-19) (A) **My 100**

A Study of Bingham Plastic Flow for Use as Temporary Diverting Agent in Hydraulic Fracturing (78-Pet-36) (A) **F 123**

### Plastic Pellets

Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) (A) **Mr 84**

### Plastic R-Curve

Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

### Plastic Windows

Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) (A) **F 130**

### Plasticity

Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**

### Plastics

Laser Processing of Plastic Parts (79-DE-17) (A) **Ag 103**

K '79—Plastics and Rubber Expo (IF) **Ag 55**

The "PXL"—Car of the 80s in Detroit (BTR) **Je 48**

### Plastics Application

Applying Plastics in a Highly Reliable, Low Cost Cooling System for Microelectronics (78-DE-W-3) (A) **F 129**

### Plate-Cylinder Intersections

The Effect of Corner Radius on Plate-Cylinder Intersections (79-PVP-15) (A) **Ag 104**

### Plate Flexibility

An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**

### Plate Formulas

Calculation of the Geometric Factor Using the Plate formula for Forged Bevel Gears with a Back Shoulder (79-DE-14) (A) **Ag 102**

### Plate Separators

A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAs-26) (A) **O 89**

### Plate Surfaces

Transition Procedure of Stationary Boundary Layers (79-GT-128) (A) **Je 98**

### Plate Vibration

Moderately Large Amplitude Plate Vibration Modes (79-DET-17) (A) **N 110**

### Plates

Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**

Axisymmetric Bending of Annular Plates (78-WA/APM-27) (A) **Je 93**

Axisymmetric Finite Element Analysis of Plates Containing Penetrations Arranged in a Square Pattern with Experimental Qualification (79-PVP-79) (A) **S 100**

Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**

Development and Characterization of an Evaporation Cold Plate for Thermal Control of Avionic Equipment (79-ENAs-4) (A) **O 86**

On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) (A) **Je 98**

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-B-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) (A) **S 102**

Finite Element Analysis of Mindlin Plates (78-WA/DE-6) (A) **Mr 85**

Free Convection Boundary Layers on a Non-Isothermal Vertical Flat Plate (79-HT-112) (A) **N 108**

Heat Transfer in Thermally Developing, Absorbing, Emitting and Scattering Slug and Couette Flows Between Parallel Plates with Collocation Method (79-HT-20) (A) **O 93**

Identification of Cracks in Circular Plates Welded at the

Contour (79-DET-106) (A) **D 106**

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) (A) **S 105**

Natural Convection from Vertical Plates with Semicircular Leading Edges (79-HT-104) (A) **N 108**

Natural Frequencies of Clamped Orthotropic Rectangular Plates With Varying Thickness (78-WA/APM-9) (A) **My 104**

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) (A) **Mr 90**

Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Je 89**

Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Tension (79-PVP-6) (A) **Ag 103**

Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-16) (A) **N 110**

Wave and Tidal Power (IF) **Je 58**

### Platform Construction

Mobile Drilling Platform (IF) **Ap 61**

### Platform Design

Offshore Technology Conference—Another World (NR) **Ji 56**

### Platform Installation

Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Ji 96**

### Platform Supports

Collapsible Module Extends Tentfold in Height (BTR) **F 60**

### Platforms

Offshore NGL Recovery Project (IF) **O 52**

### Platinum

Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**

### Platoon Stability

Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) (A) **Ap 94**

Plaut, R. H. Postbuckling Analysis of Continuous, Elastic Systems Under Multiple Loads—Part 1: Theory (79-APM-16) (A) **S 107**; Part 2: Applications (79-APM-17) (A) **S 107**

Play, D. An Attempt to Provide a Unified Treatment of Tribology Through Load Carrying Capacity, Transport and Continuum Mechanics (79-Lub-18) (A) **D 103**; Relation Between Wear of Cr-Ni Steels and Debris Transport at High Temperature (950°C) (79-Lub-11) (A) **D 103**; Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**

Platicher, R. H. Prediction of Incompressible Turbulent Separating Flow (78-WA/FE-4) (A) **Je 88**

### Plotting Rule

A Distribution-Independent Plotting Rule for Ordered Failures (79-DET-112) (A) **D 106**

Plumb, O. A. An Experimental Study of Transition and Turbulent Natural Convection in a Vertical Open-Ended Tube (79-HT-37) (A) **O 95**

Plummer, M. C. Suggested Improvements in the Measurement of Pump Vibration for In-Service Inspection (79-WA/NE-5) (A) **Mr 88**

### Pneumatic Isolators

Compact Self-Damped Pneumatic Isolators for Road Vehicles (79-DET-101) (A) **D 105**

### Pneumatic Tired Vehicle

Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**

Poesentrup, H. The Behavior of a Closed-Cycle Gas Turbine with Time Dependent Operating Conditions (79-GT/Isr-2) (A) **O 83**

### Point Contact Conjunctions

Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**

### Point Focusing Collector System

Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Je 95**

### Point Focusing Solar Collectors

Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Je 94**

### Polar Strain

An Approximate Explicit Solution for Polar Strain of Hydraulically Bulged Circular Diaphragms (79-DET-111) (A) **D 106**

Potentz, L. M. (author) Engineering Fundamentals for Professional Engineers Examinations (CB) **D 109**

### Policy Perceptions

ASME Policy Perceptions (C) **F 54**

### Political Differences

Seeing the World the Way It Is (C) **Ji 39**

### Politicians

Politicians and Engineers Debate U.S. Shortage of Innovation and Energy (NR) **Ag 56**

Polk, L. October Okay (C) **Ja 40**

Pollock, T. A. Use of Phytotrons in Assessing Environmental Requirements for Plants in Space Habitats (79-ENAs-28) (A) **O 88**

Pollono, L. A. Design Considerations for CBRP Heat Transport System Piping Operating at Elevated Temperatures (79-NE-5) (A) **S 105**

### Pollutant Control Techniques

Combustion Modification Pollutant Control Techniques for Industrial Boilers—The Influence of Fuel Oil Properties and Atomization Parameters (78-WA/APC-13) (A) **My 96**

### Pollutant Emissions

The Advanced Low-Emissions Catalytic-Combustor Program: Phase 1—Description and Status (79-GT-192) (A) **Ji 103**

Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Ji 104**

Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**

Evaluation of Combustion Modifications for Emissions Reduction on Industrial Processes (78-WA/APC-8) (A) **My 96**

Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**

### Pollutant Reduction

New Sizing Agent Can Reduce Pollutants (EN) **Ji 68**

### Pollutants

Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**

### Polluters

Laser "Eye in Sky" to Fight Polluters (C) **N 80**

### Pollution

Burning Crude Oil Without Pollution (BTR) **D 61**

Lake Superior and PCB Pollution (BTR) **D 63**

A Perspective of Environmental Pollution (CB) **D 110**

Pollution and Policy: A Case Essay on California and Federal Experience with Motor Vehicle Air Pollution, 1940-1975 (CB) **Mr 98**

Precise Control: The Key to Minimizing Combustion Air (78-WA/APC-4) (A) **Ap 102**

### Pollution Control

Catalytic Converter Research (EN) **Ji 67**

Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

New System Samples Stack Gases (EN) **O 81**

Pollution Control Costs (NB) **Ap 64**

Return to the Stone Age (C) **F 55**

### Pollution Control Plant

Sophisticated Water Treatment (BTR) **Ap 53**

### Pollution Standards

Coal Use Can Triple, But at Cost to Public and Industry (BTR) **O 46**

### Polyethylene

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Je 96**

### Polyframe Dome Structure

The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**

### Polymer

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Je 96**

### Polymers

Stabilization of Crimp in Bulk Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Ja 92**

### Polyphenyl Ether Fluid

Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**

Potzonetti, A. Natural Convection in Heat Generating Fluids in Cavities (79-HT-95) (A) **N 107**

Pond, J. E. Thermal Stress Evaluation of Industrial Brake Drums Using Finite Element and Finite Difference Techniques (79-DE-20) (A) **Ag 103**

## Pond Design

Solar Ponds (F) **S 85**

## Pond Liner

Impermeable Liner for Catch Basins (BTR) **Ap 54**

## Pool Boiling

Nucleate Boiling Performance of Refrigerants and Refrigerant-Oil Mixtures (79-HT-79) (A) **N 105**

Poole, T. G. (author) Using Simulation to Solve Problems (CB) **O 97**

Poole, S. Measurement of the Elastic-Plastic Boundary Around Coldworked Fastener Holes (78-WA/APM-2) (A) **My 103**

Pope, M. D. Field Tests of Photovoltaic Power Systems (79-Sol-10) (A) **Ag 93**

Pope, W. L. Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Ja 52**

## Core Pressure

Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**

Porah, M. On the Motion of Rectangular Prismatic Bodies (79-FE-3) (A) **O 84**

## Porosity

An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**

## Porous Bearings

Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (78-Lub-30) (A) **Ja 96**

## Porous Beds

The Effect of Applied Temperature Gradients on the Convective Instability of a Volumetrically Heated Porous Bed (79-HT-30) (A) **O 94**

## Porous Bodies

Mechanism of Freeze-Drying of Porous Bodies by Conductive Heat Transfer (79-HT-86) (A) **N 106**

## Porous Ducts

Laminar Heat Transfer in Porous Ducts with Variable Suction (78-WA/HT-41) (A) **Mr 96**

## Porous Formations

Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**

## Porous Media

Double Reheat Steam Cycles (ES) **N 32**

Radiant Energy Transport in Porous Media (79-HT-1) (A) **O 92**

Steady Thermal Convection from a Concentrated Source in a Porous Medium (79-HT-69) (A) **N 104**

## Porous Metal Bearings

Optical Analysis of Porous Metal Bearings (78-Lub-29) (A) **Ja 96**

## Porous Walls

Evaluation of Laminated Porous Wall Materials for Combustor Liner Cooling (79-GT-100) (A) **Ag 99**

Porowski, J. S. Plastic Design of Ligaments (79-PVP-37) (A) **Ag 106**

## Portable Container

TankTainer—A Portable Bulk Liquid Tank Container for Intermodal Service (78-WA/RT-10) (A) **My 93**

## Portable Earth Terminal

Teleconferencing Brings Diplomacy into the Space Age (NR) **Ja 57**

## Portable Thermometer

Portable Infrared Thermometer (IF) **Ja 54**

## Position Feedback

Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers with Position Feedback (78-WA/DSC-3) (A) **Ap 93**

## Position Indicator

"Blind" Position Indicator (BTR) **Ja 49**

## Positive Expulsion Tankage Construction

High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**

## Postbuckling

Postbuckling Analysis of Continuous, Elastic Systems Under Multiple Loads—Part 1: Theory (79-APM-16) (A) **S 107**; Part 2: Applications (79-APM-17) (A) **S 107**

Potter, J. H. An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) (A) **My 94**; (recipient) Worcester Reed Warner Medal **Ja CR-13**

## Pottery Dating

Dating via Magnetic 'Fingerprints' in Ancient Pottery (BTR) **Ja 54**

Povarov, O. A. Problems of Moisture Separation in Wet Steam Turbines (78-WA/GT-4) (A) **Ap 88**

Powe, R. E. Gas Stream Composition and Temperature

Determination in a Coal-Fired MHD Simulation Facility (78-WA/HT-23) (A) **Mr 94**; Numerical Solution of Two-Dimensional Natural Convection in Enclosed Spaces (78-WA/HT-11) (A) **Mr 93**

Powell, J. D. Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**

Powell, J. R. Laser-Particulate Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Ji 102**

Powell, W. B. Nitinol Engines (C) **S 50**

## Power

Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Ji 91**

Applications for Computers in Industrial Powerhouses (79-IPC-Pwr-6) (A) **D 101**

Economics of Wind Generated Power (78-Pet-80) (A) **F 128**

Efficiency and Amplification in Jet Pumps (78-WA/DSC-7) (A) **Ap 94**

Electric Vehicle Demonstration (ES) **Ji 20**

Evaluation of Alternative Steam Sources for Industrial Cogeneration (79-IPC-Pwr-2) (A) **D 101**

Evaluation of Industrial Boiler Operator Training Experience (79-IPC-Pwr-5) (A) **D 101**

Industrial Cogeneration-Methods of Measuring and Improving Economic Merit (79-IPC-Pwr-1) (A) **D 100**

New Hydroelectric Project (IF) **Ap 80**

Power from Waste Heat Streams—An Advanced Concept (BTR) **Ag 46**

Steam Plant Operator Training (79-IPC-Pwr-4) (A) **D 101**

Techniques of Solid Waste Fuel Combustion (79-IPC-Pwr-3) (A) **D 100**

Untapped Power Where River Meets Sea (BTR) **Ja 49**

## Power Battle

Nuclear Vs. Coal Costs (NB) **Je 57**

## Power Cable

Undersea Power Cable (IF) **D 67**

## Power Consumption

Gear Hobbing Torque and Power (78-WA/Prod-33) (A) **My 101**

## Power Control

Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Ji 100**

## Power Conversion Systems

A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-62) (A) **Ji 92**

## Power Converters

Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**

Thermionic Power Converters for Solar Energy (78-DET-74) (A) **Ja 90**

Thermionic Power Converters Mechanical Systems (78-DET-74) (A) **Ja 99**

## Power Costs

Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**

## Power Cycle

The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Ji 103**

## Power Distribution

Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**

## Power Engineering

Coal Preparation and Handling for a Mine-Mouth Power Station: Design Concepts and Operating Experience (79-JPGC-Pwr-3) (A) **D 97**

Consideration of Condenser Height in the Optimization of Power Plant Condensers (79-JPGC-Pwr-2) (A) **D 97**

Cycling Operation of Fossil Fuel Power (79-JPGC-Pwr-5) (A) **D 97**

Design and Application of Feed-Water Pumping Equipment for Improved Availability in Cyclic Operation (79-JPGC-Pwr-8) (A) **D 97**

Design and Operation of Large Fossil-Fueled Steam Turbines Engaged in Cyclic Duty (79-JPGC-Pwr-7) (A) **D 97**

Electrostatic Precipitator's Performance in Cycling Duty (79-JPGC-Pwr-6) (A) **D 98**

Environmental Assessments of Small Scale Fluid Bed Combustors (79-JPGC-Pwr-10) (A) **D 98**

Power Plant Performance Model (79-JPGC-Pwr-1) (A) **D 97**

Thermal Cycle Loss Considerations for Power Plants Burn-

ing Very Low Rank Solid Fuels (79-JPGC-Pwr-4) (A) **D 97**

Variable-Pressure Operation and External Turbine Bypass Systems to Improve Power Plant Cycling Performance (79-JPGC-Pwr-9) (A) **D 98**

## Power Output

An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Ja 86**

## Power Generating Stations

Improved Coal-Slurry Pipeline (BTR) **O 46**

## Power Generating Turbines

Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Ji 96**

## Power Generation

Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**

Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**

Environmental Effects of Burning Wastes (BTR) **S 61**

Fusion Power Development: Status and Prospects (79-JPGC-NE-1) (A) **D 96**

Industrial Cogeneration-Methods of Measuring and Improving Economic Merit (79-IPC-Pwr-1) (A) **D 100**

Photovoltaic Electric Power Generation from a Utility Perspective (79-Sol-18) (A) **Ag 94**

Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **Ji 100**

Wind Turbine Energy (EN) **Je 58**

## Power Industry

The Use of Design Models in the Power Industry (79-PVP-7) (A) **Ag 104**

## Power Loss

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) (A) **Ja 95**

The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/Prod-18) (A) **My 99**

## Power Operators

Applications for Computers in Industrial Powerhouses (79-IPC-Pwr-6) (A) **D 101**

## Power Output

Mitsubishi-Man Diesel Engine (IF) **O 53**

## Power Piping Systems

Erection Tolerances for Power Piping Systems (79-PVP-21) (A) **Ag 105**

## Power Plant Condensers

Consideration of Condenser Height in the Optimization of Power Plant Condensers (79-JPGC-Pwr-2) (A) **D 97**

Noise Level Considerations Associated with Power Plant Condenser Steam Dump (79-PVP-9) (A) **Ag 104**

## Power Plant Design

Nuclear Power, Volume 1—Power Plant Design, and Volume 2—Project Management (TL) **My 106**

## Power Plant Performance

Power Plant Performance Model (79-JPGC-Pwr-1) (A) **D 97**

## Power Plants

America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 94**

Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Ji 90**

Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 98**

Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Ji 95**

An Award for Acoustic Flowmeters (ES) **O 18**

Back to Wood (ES) **D 21**

Closed-Cycle Gas Turbine (ES) **D 21**

Coal on Lignite Handling Functions by Least Input Power (79-IPC/Fu-2) (A) **D 101**

Combined-Cycle Power Plants (ES) **Je 18**

The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Ja 98**

Computer Design Aid (ES) **O 18**

Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Ji 100**

Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**

The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**

Design Specifications for ASME Section III Nuclear Class 1 Piping (79-PVP-75) (A) **S 90**

Double Reheat Steam Cycles (ES) **N 32**

Dry Cooling of Power Plants (ES) **D 20**

Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Enr-2) (A) **Je 92**

Geothermal Energy (EN) **Ji 68**

Geothermal Power and Water Production Studies at the University of California (78-WA/Enr-7) (A) **Je 93**

GUID-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Ji 98**

Heat Exchangers for OTEC (ES) **My 20**

The Impact of Solar Power (ES) **My 21**

Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Ji 97**

Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**

Labor Peace (ES) **Ag 18**

Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) (A) **Mr 87**

Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ji 97**

A National Park Story (ES) **Ji 21**

Nuclear Power Plant (IF) **Ap 60**

Pipe Supports and Restraints—Computer Designed and Drawn (79-PVP-67) (A) **S 98**

PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Je 91**

Power Plant Capital Costs—What's Behind the Upward Climb? (79-PVP-87) (A) **S 100**

Problems of Piping Networks Supplied from Cogeneration Power Plants (79-PVP-66) (A) **S 98**

Review of Waste Heat Rejection from Geothermal Power Plants (79-HT-15) (A) **O 92**

Reynolds Pushes Energy Savings (ES) **D 21**

A Simple Solar Gas Turbine Plant (79-GT-90) (A) **Ji 95**

Standardization as a Means of Reducing Power Plant Costs (79-PVP-108) (A) **S 102**

The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Enr-4) (A) **Je 92**

Structural Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-68) (A) **S 98**

Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 90**

Thermal Cycle Loss Considerations for Power Plants Burning Very Low Rank Solid Fuels (79-JPGC-Pwr-4) (A) **D 97**

Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**

The Use of Heat Exchangers with Thermocexcel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**

Variable-Pressure Operation and External Turbine Bypass Systems to Improve Power Plant Cycling Performance (79-JPGC-Pwr-9) (A) **D 98**

"Zero Discharge" Wastewater (ES) **F 25**

**Power Production**

The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**

**Power Recovery System**

Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Ji 101**

**Power Requirements**

Laser-Particulate Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Ji 102**

Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**

**Power Savings**

Closed Loop Source Monitoring Saves Energy and Money (78-WA/APC-6) (A) **Ap 103**

**Power Series Solutions**

The Use of Power Series Solutions in Radiation Heat Transfer and Thermal Network Analysis (79-HT-65) (A) **N 104**

**Power Source**

Mobile Gas Turbine Power (IF) **O 53**

Uranium from Seawater (ES) **Ji 20**

**Power Stations**

Coal Preparation and Handling for a Mine-Mouth Power Station: Design Concepts and Operating Experience

(79-JPGC-Pwr-3) (A) **D 97**

Power Station Experience with Retrofitted Programmable Fuel Management and Sequencing Controllers for Aero-Derivative Gas Turbine (79-GT-191) (A) **Ag 100**

Refuse-Incinerating Power Station (IF) **Ap 61**

World's Largest Solar Electric Power Station (BTR) **D 61**

**Power Supply**

Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**

Silicon Solar Cells (IF) **S 65**

**Power Systems**

Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Ji 91**

Evaluate Satellite Power Systems (BTR) **O 47**

Field Tests of Photovoltaic Power Systems (79-Sol-10) (A) **Ag 93**

Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**

Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Je 95**

**Power Technology**

Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) (A) **Mr 90**

An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**

A Power Company's Approach to Improved Steam Turbine Availability (78-WA/Pwr-1) (A) **Mr 90**

A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) (A) **Mr 90**

**Power Trains**

Computerized Time Transient Torsional Analysis of Power Trains (79-DET-74) (A) **N 116**

Power Trains for Tractors **Ap 40**

**Power Transmission Shafts**

Computer-Aided Fatigue Design of Power Transmission Shafts with Strength Constraints Using a Finite Line Element Technique and a Proposed Fatigue Failure Criterion (79-DET-103) (A) **D 106**

**Power Transmissions**

Nonsynchronous Vibrations Observed in a Supercritical Power Transmission Shaft (79-GT-146) (A) **Ag 100**

**Power Turbine**

Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Ji 100**

**Powerhouse Operator Training**

Steam Plant Operator Training (79-IPC-Pwr-4) (A) **D 101**

Prachuktam, S. Failure Analysis of Tubes with Wastages (79-PVP-113) (A) **S 103**

Prager, R. C. The Analysis of Heat Transfer with and without Condensation in a Heat Pipe Heat Exchanger (78-WA/HT-59) (A) **Ap 92**

Prakash, J. Micropolarity—Roughness Interaction in Hydrodynamic Lubrication (79-Lub-8) (A) **D 102**

**Prandtl Numbers**

An Analysis of Heat Transfer in a Turbulent Heat-Generating Flow with High Prandtl Numbers (79-HT-114) (A) **N 108**

Prasad, R. Heat and Mass Transfer in a Catalytic Combustor (79-HT-57) (A) **N 103**

**Pre-Bent Adherends**

Stresses in Adhesive Lap Joints with Pre-Bend Adherends (79-DET-105) (A) **D 106**

**Prebuckled Cylinders**

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**

**Precipitators**

Electrostatic Precipitator's Performance in Cycling Duty (79-JPGC-Pwr-6) (A) **D 98**

Precious, R. W. Report of a Test Program to Update Equipment Specifications and Design Criteria (78-IPC/Fu-3) (A) **Ja 91**

**Precipitator Performance**

Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) (A) **My 97**

**Prediction Equations**

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**

**Prediction Methods**

An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **Ji 98**

**Predictive Techniques**

Field Studies of Slagging in Tangentially Fired Boiler

Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**

**Preheat Temperature**

Preheat Temperature for Vacuum Dewatering of Sealed Bit Bearing Prior to Greasing (78-Pet-38) (A) **F 124**

Pram, L. L. Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **Ji 102**

Premierant, W. A New Rapid-Response Hydraulic Actuator-Design, Analysis and Test Results (79-DE-3) (A) **Ag 101**

**Premixed Flames**

The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**

Proo, P. Pat Proo Protests (C) **Ag 40**

**Press Control Units**

Electronic Press Control (IF) **Ja 55**

**Pressure**

Base Pressure Associated with Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) (A) **S 108**

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **My 99**

Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**

Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Ji 104**

Development of a Hydraulic Chambered, Actively Controlled Boring Bar (78-WA/Prod-20) (A) **My 100**

The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/DSC-9) (A) **Je 99**

Effects of Aerodynamic Losses on the Performance of Large Dry Cooling Towers (78-WA/HT-18) (A) **Ap 90**

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) (A) **F 130**

Heat Transfer by a Corona Wind Heat Exchanger (78-WA/HT-43) (A) **Ap 92**

Hyperhemispherical Viewports for Undersea Application (78-WA/OCE-2) (A) **F 130**

An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) (A) **My 94**

Low Pressure Rod Bundle Critical Heat Flux Tests (79-HT-46) (A) **O 95**

The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ji 103**

Relationships for Nozzle Performance Coefficients (79-GT-145) (A) **Ji 101**

Some Observations on the Relationship Between Lubricant Mechanical and Dielectric Transitions Under Pressure (79-Lub-16) (A) **D 103**

Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Je 88**

Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Je 89**

Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Ji 91**

**Pressure Algorithm**

Multimode Leak Detection System (78-Pet-53) (A) **F 125**

**Pressure Changes**

Pipeline Rupture Detection and Controls (78-Pet-54) (A) **F 126**

**Pressure Control**

The Ultimate Control Problem—A Wild Oil or Gas Well **Je 20**

**Pressure Data**

The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Ji 98**

**Pressure Distribution**

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **Ji 96**

Hydraulic Axial Thrust in Multistage Centrifugal Pumps (73-WA/FE-12) (A) **Je 39**

Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**

Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ji 98**

Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ji 98**

Pressure Distribution from Experimental Data for Elastohy-



drodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**  
 Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**  
**Pressure Drop**  
 Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **Ji 102**  
 Electronic Line Break Controls for Gas Pipelines (78-Pet-52) (A) **F 126**  
 Heat Transfer and Pressure Drop in Gas-Cooled Fluidized-Bed Combustors for Gas Turbine Systems-Analysis and Application to Design (79-HT-87) (A) **H 106**  
 Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Ji 99**  
 Selection of Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-8) (A) **Ja 97**  
**Pressure Elevation**  
 Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**  
**Pressure Flow**  
 Application of Average Flow Model to Lubrication Between Rough Sliding (78-Lub-17) (A) **Ja 95**  
**Pressure Fluctuations**  
 Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 89**  
**Pressure Gradients**  
 Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **Je 100**  
**Pressure Level**  
 Laboratory Evaluation of a Closed Brayton Engine with a Gas Management System (79-GT-140) (A) **Ji 100**  
**Pressure Loss**  
 Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Ji 93**  
 Vortex Effects Resulting from Transverse Injection in Turbine Cascades and Attempts at Their Reduction (79-GT-18) (A) **Je 99**  
**Pressure Measurements**  
 Blade-Flow Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Ji 96**  
 Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Je 88**  
 Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Ja 94**  
**Pressure Modeling**  
 The Role of Radiation in Pressure Modeling of Upward Fire Spread (79-HT-28) (A) **O 94**  
**Pressure Profiles**  
 Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**  
**Pressure Ratios**  
 Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**  
 Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Ji 94**  
 The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Ji 96**  
 On the Optimal Tube Spacing For Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**  
 The Relationships of Power and Heat Production with Closed Cycle Gas Turbines (79-GT-103) (A) **Ji 96**  
**Pressure Recovery**  
 The Flow Control Properties of a Specially Designed Tee-Joint (78-WA/DSC-5) (A) **Ap 94**  
**Pressure Relief Valves**  
 On the Sizing of Pressure Relief Valves for Pressure Vessels which are Used in the Transport of Liquefied Gases (78-WA/HT-39) (A) **Mr 96**  
**Pressure Seals**  
 Hydrodynamically Effects in a Misaligned Radial Face Seal (78-Lub-12) (A) **Ja 94**  
**Pressure Sensitive Valve**  
 A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**  
**Pressure Sensor**  
 A Fluidic Partial Pressure Sensor (78-WA/DSC-22) (A) **Ap 95**  
**Pressure Surfaces**  
 An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**  
**Pressure Test**  
 Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**

**Pressure Vessel Construction**  
 High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**  
**Pressure Vessel Technology**  
 Developments in Pressure Vessel Technology (CB) **Ag 108**  
**Pressure Vessels**  
 Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) (A) **S 96**  
 Design of Ellipsoidal and Toroidal Pressure Vessels to Probabilistic Criteria (79-DET-110) (A) **D 106**  
 Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBR Pressure Vessels (79-PVP-59) (A) **S 96**  
 Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Ja 96**  
 Mammoth Automated Welding Assembly (BTR) **D 57**  
**Pressure Vessels and Piping**  
 Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) (A) **S 102**  
 Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**  
 Analysis of Pipe Whip (79-PVP-122) (A) **S 104**  
 An Analysis Procedure for Predicting Weld Repair Residual Stresses in Thick Walled Vessels (79-PVP-31) (A) **Ag 105**  
 The Analytical and Experimental Studies on the Structural Design for the Absorber Tube (79-PVP-111) (A) **S 103**  
 Application of Automated Design to Piping Systems: Routing and Support Location (79-PVP-44) (A) **Ag 107**  
 Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**  
 Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analysis of Nuclear Reactor Vessels (79-PVP-116) (A) **S 103**  
 Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) (A) **Ag 103**  
 An Approximate Method for the Determination of the Resonance Frequency of Pipe Whip (79-PVP-123) (A) **S 104**  
 Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**  
 An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates (79-PVP-50) (A) **S 97**  
 Axisymmetric Finite Element Analysis of Plates Containing Penetrations Arranged in a Square Pattern with Experimental Qualification (79-PVP-79) (A) **S 100**  
 Bursting Experiment of a High Pressure Multiwall Test Vessel (79-PVP-96) (A) **S 101**  
 Combination of Modal Forces and Stresses in the Seismic Design of Piping Systems (79-PVP-112) (A) **S 102**  
 A Comparison of Fatigue Test Data on Piping with the ASME Code Fatigue Evaluation Procedure (79-PVP-92) (A) **S 100**  
 Comparison of Steam Hammer Dynamic Testing with Analysis for Main Steam Piping (79-PVP-22) (A) **Ag 105**  
 Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**  
 Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 98**  
 Composite Modal Damping in Structures (79-PVP-71) (A) **S 99**  
 Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) (A) **S 96**  
 Conceptual Design of Combined In Situ and Surface Retorting of Oil Shale (79-PVP-72) (A) **S 99**  
 Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation (79-PVP-119) (A) **S 103**  
 Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**  
 Creep Buckling of Spherical Shells Using a Comparative Stress Method (79-PVP-3) (A) **Ag 103**  
 Criteria and Associated Dynamic Elastic Plastic Analysis of Auxiliary Branch Piping for a Large LOCA (79-PVP-26) (A) **Ag 106**  
 Cylindrical Panels of Various Shapes for Pressure Vessels

(79-PVP-110) (A) **S 102**  
 A Damage Tolerant Design and Inspection Philosophy for Nuclear and Other Pressure Vessels (79-PVP-124) (A) **S 104**  
 Design Considerations in Liquid Metal Fast Breeder Reactor Upper Internals Structures (79-PVP-34) (A) **Ag 106**  
 Design of a Crack Growth Based Structural Maintenance System (79-PVP-95) (A) **S 101**  
 Design of Radial Nozzles in Cylindrical Shells for Internal Pressure (79-PVP-14) (A) **Ag 104**  
 Design Specifications for ASME Section III Nuclear Class I Piping (79-PVP-75) (A) **S 99**  
 The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**  
 Detection of Fatigue Crack Formation in Nozzle Welding of Pressure Vessels (79-PVP-101) (A) **S 102**  
 Determination of Stress Intensification Factors for Integrally Reinforced 45-Deg Lateral Branch Connections (79-PVP-98) (A) **S 101**  
 Dynamic Analysis of Cantilever Beams (79-PVP-78) (A) **S 99**  
 Dynamic Propagation of Circumferential Cracks in Two Pipes with Large-Scale Yielding (79-PVP-81) (A) **S 99**  
 Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) (A) **My 96**  
 Economic Benefits and Economic Impact of Interactive Computer-Aided Design (79-PVP-80) (A) **S 100**  
 The Effect of Corner Radius on Plate-Cylinder Intersections (79-PVP-15) (A) **Ag 104**  
 Effect of Heat Treatment on Elevated Temperature Fatigue-Crack Growth Behavior of Two Heats of Alloy 718 (78-WA/PVP-3) (A) **My 95**  
 Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) (A) **S 99**  
 Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**  
 Elastic-Plastic Stress Analysis and ASME Code Evaluation of a Bottomhead Penetration in a Reactor Pressure Vessel (79-PVP-17) (A) **Ag 104**  
 Elastoplastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) (A) **Ag 106**  
 Elastic and Viscoplastic Impact Bending Response Analysis of Nuclear Shipping Cask Structures (79-PVP-43) (A) **Ag 107**  
 Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBR Pressure Vessels (79-PVP-59) (A) **S 96**  
 Energy Extraction Operations: Some Preliminary Results (79-PVP-38) (A) **Ag 106**  
 The Enriched Element for Finite Element Analysis of Three-Dimensional Elastic Crack Problems (79-PVP-88) (A) **S 100**  
 Environmental Effects and the ASME Code (79-PVP-11) (A) **Ag 103**  
 Erection Tolerances for Power Piping Systems (79-PVP-21) (A) **Ag 105**  
 Estimation of Stress Intensity Factors for Embedded Irregular Cracks Subjected to Arbitrary Normal Stress Fields (79-PVP-90) (A) **S 100**  
 Evaluation of the SRSS Combination of Primary Plus Secondary Dynamic Peak Responses (79-PVP-40) (A) **Ag 107**  
 Experience in the Use of FBR Core Component Structural Design Criteria as Applied FFT (79-PVP-48) (A) **S 97**  
 Experimental Study of Fatigue Crack Initiation Due to Rapid Thermal Cycling in Pressure Vessel Steels (79-PVP-109) (A) **S 102**  
 External Hydrostatic Pressure Loading of Concrete Cylinder Shells (79-PVP-125) (A) **S 104**  
 Failure Analysis of a 414-MPa (60,000-psi) Isostatic Press (79-PVP-18) (A) **Ag 105**  
 Failure Analysis of Tubes with Wastages (79-PVP-113) (A) **S 103**  
 Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) (A) **S 102**  
 Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-B-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) (A) **S 102**  
 Fatigue Crack Growth in 2 1/4Cr-1Mo Steel exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**  
 The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-83) (A) **S 100**  
 Fatigue Life Evaluation of Nuclear Components and Piping



- (79-PVP-16) (A) **Ag 104**  
 Fatigue Strength Calculation of Prestressed Pressure Vessels for Isostatic Presses (79-PVP-117) (A) **S 104**  
 Fatigue Threshold Stress Intensity and Life Estimation of ASTM-A106B Piping Steel (79-PVP-86) (A) **S 100**  
 The Federal Hot Dry Rock Geothermal Energy Development Program: An Overview (79-PVP-36) (A) **Ag 105**  
 Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**  
 A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**  
 Formulation of Torsional Soil-Foundation Interaction of Building Structures (79-PVP-74) (A) **S 99**  
 The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**  
 A General Fatigue Evaluation Method (Elastic Stress or Plastic Strain with Constant or Varying Principal Direction) (79-PVP-77) (A) **S 99**  
 Have Engineers Been Replaced by Computers? (79-PVP-10) (A) **Ag 104**  
 Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**  
 Hydraulically Actuated Treating Packers for Dry Rock Geothermal Applications (79-PVP-23) (A) **Ag 105**  
 Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) (A) **Ag 104**  
 Inelastic Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-25) (A) **Ag 106**  
 Inelastic Bending of Beams under Time-Varying Moments—A State Variable Approach (79-PVP-82) (A) **S 100**  
 An incremental Form of the Single-Integral Nonlinear Viscoelastic Theory for Electric-Plastic-Creep Finite Element Analysis (79-PVP-114) (A) **S 103**  
 Influence of Core Assembly Refueling Requirements on LMFBR Core System Design (79-PVP-33) (A) **Ag 106**  
 Influence of Locking Velocity and Bleed Rate on Hydraulic Snubber Performance (79-PVP-39) (A) **Ag 106**  
 Influences of Flow Shapes on Stress Intensity Factors for Pressure Vessel Surface Flaws and Nozzle Corner Cracks (79-PVP-65) (A) **S 98**  
 Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**  
 An Introduction to Base Isolation (79-PVP-69) (A) **S 98**  
 Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**  
 An LEM Analysis for the Effects of Weld Repair Induced Residual Stresses on the Fracture of the HSST ITV-8 Vessel (79-PVP-30) (A) **Ag 105**  
 The LLL Underground Coal Gasification Project: 1978 Status (79-PVP-93) (A) **S 100**  
 Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) (A) **S 96**  
 Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) (A) **Ag 106**  
 Multi-Degree-of-Freedom Analysis of Power-Actuated Valves (79-PVP-106) (A) **S 102**  
 A New Computer Code for the Estimation of the Probability of Failure of PWR Pressure Vessels (79-PVP-118) (A) **S 103**  
 Noise Level Considerations Associated with Power Plant Condenser Steam Dump (79-PVP-9) (A) **Ag 104**  
 Numerical Computations in Nonlinear Mechanics (79-PVP-103) (A) **S 102**  
 Numerical Evaluation of an Inelastic Piping Elbow Element (79-PVP-41) (A) **Ag 106**  
 Overview of Coal Liquefaction in the U. S. Department of Energy (79-PVP-45) (A) **S 96**  
 Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**  
 A Passive Graphics Program for General Finite Element Analyses (79-PVP-20) (A) **Ag 105**  
 Pipe Supports and Restraints—Computer Designed and Drawn (79-PVP-67) (A) **S 98**  
 Piping Reaction on Active and Non-Active Equipment Nozzles (79-PVP-28) (A) **Ag 105**  
 Plastic Buckling of Cylindrical Shells under Axial Compression (79-PVP-99) (A) **S 101**  
 Plastic Design of Ligaments (79-PVP-37) (A) **Ag 106**  
 Power Plant Capital Costs—What's Behind the Upward Climb? (79-PVP-87) (A) **S 100**  
 Probabilistic Seismic Response Analysis of Nuclear Power Plant Structures (79-PVP-73) (A) **S 99**  
 Problems of Piping Networks Supplied from Cogeneration Power Plants (79-PVP-66) (A) **S 98**  
 Relationships Between Mechanical Properties and the Extension and Arrest of Unstable Cracks in Line Pipe Steels (79-PVP-76) (A) **S 99**  
 Scale Model Impact Tests of Hazardous Material Container Designed to Section VIII, Division 1, of the ASME Code (79-PVP-42) (A) **Ag 106**  
 Aseismic Building Isolation Systems: Better Protection Against Earthquake Damage (79-PVP-54) (A) **S 96**  
 Seismic-Evaluation of Piping and Supports at Diablo Canyon Site Units 1 and 2, for the Postulated Hoshin Earthquake (79-PVP-100) (A) **S 102**  
 Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**  
 Seismic Restraint Spacing: A Velocity Spectrum Method and Other Considerations (79-PVP-12) (A) **Ag 104**  
 Sensitization Kinetics in Type 304 Stainless Steel (79-PVP-85) (A) **S 99**  
 A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 96**  
 A Simplified Approach to Creep Buckling of Structures Under Varying Loads (79-PVP-70) (A) **S 99**  
 Small-Scale Yielding at the Tip of a Through-Crack in a Shell (79-PVP-89) (A) **S 100**  
 Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**  
 Some Technical and Legal Considerations in Software Development (79-PVP-91) (A) **S 100**  
 Standardization as a Means of Reducing Power Plant Costs (79-PVP-108) (A) **S 102**  
 Static and Dynamic Analysis of Space Frameworks with Curved Members (79-PVP-97) (A) **S 101**  
 Status of Coal Gasification Program (70-PVP-46) (A) **S 96**  
 Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**  
 Stresses in Elbows Created by Supporting Lug Load (79-PVP-51) (A) **S 97**  
 Structural Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-68) (A) **S 98**  
 Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**  
 SUPAN—A Computer Program for the Analysis of Beam Type Piping Supports (79-PVP-19) (A) **Ag 104**  
 Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**  
 Thermal Transient Analysis in Layered Pressure Vessels (79-PVP-13) (A) **Ag 104**  
 Toward the Rational Selection of Base Isolation Systems (79-PVP-53) (A) **S 97**  
 Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) (A) **Ag 103**  
 Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct (79-PVP-27) (A) **Ag 105**  
 The Use of Design Models in the Power Industry (79-PVP-7) (A) **Ag 104**  
 The Use of Pre-Insulated Pipe Supports as Structural Support Members (79-PVP-47) (A) **Ag 107**  
 A Variable-Step Central Difference Method for Structural Dynamics Analysis—Part I: Theoretical Aspects (79-PVP-120) (A) **S 103**; Part II: Implementation and Performance Evaluation (79-PVP-121) (A) **S 104**  
**Pressure-Viscosity Effects**  
 Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Ja 95**  
**Pressurized Fluid-Bed Combustor**  
 Design Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**  
**Pressurized Fluidized Bed**  
 Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**  
 Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**  
**Pressurized Fluidized-Bed Combustors**  
 Removal of Gaseous Alkali Metal Compounds from Hot Flue Gas by Particulate Sorbents (79-GT-154) (A) **Ji 100**  
**Pressurized Shells**  
 Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**  
**Preswath, S. M.** Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**  
**Pre-Twisted Blades**  
 Dynamic Stability of Pre-Twisted Blades under Lateral Parametric Excitation (79-DET-91) (A) **D 104**  
**Prevention Doctrine**  
 Prevention of Significant Deterioration (78-TS-3) (A) **F 129**  
**Preventive Maintenance**  
 Boiler Plant Accidents—Four Case Histories (78-Pet-46) (A) **F 125**  
**Preview Control**  
 Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) (A) **Ap 96**  
**Prevorsek, D. C.** Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) (A) **Ja 92**  
**Price, J. H. (author)** Non-Nuclear Futures: The Case for an Ethical Energy Strategy (CB) **N 118**  
**Price, P. St. J.** Basis of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**  
**Primary Factors**  
 Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**  
**Primary Laboratory Data**  
 A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) (A) **Ja 94**  
**Primordial Black Holes (PBH)**  
 Search for a PBH via a CRIF—or How to Cram Mt. Everest into an Atomic Nucleus (BTR) **N 70**  
**Printing Equipment**  
 Application of Impact Damping to Rotary Printing Equipment (79-DET-82) (A) **N 116**  
**Prisms**  
 Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Ja 88**  
**Prithvi Raj, D.** Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Ja 100**  
**Privoznik, E. J.** The Growth and Evolution of the TPE331 (79-GT-164) (A) **Ji 101**  
**Proano, E. A.** Selection and Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-8) (A) **Ja 97**  
**Probability-Density Nature**  
 Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Ja 88**  
**Probes**  
 Response Characteristics of Optical Probes (78-WA/HT-3) (A) **My 92**  
**Probst, R. F. (author)** Water in Synthetic Fuel Production: The Technology and Alternatives (CB) **Ja 100**  
**Process Accuracy**  
 A New Cumulative Damage Model—Part 3 (78-WA/APM-19) (A) **My 104**  
**Process Computer Systems**  
 Real Time Process Computer Systems (CT) **Ap 71**  
**Process Control**  
 FP-1—A Microcomputer Language for Controlling Hydraulic Systems (78-DE-W-1) (A) **F 128**  
 The Microprocessor: Key to Company Survival? (BTR) **Ji 44**  
 A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**  
**Process Control Systems**  
 Automated Process Control Systems: Concepts and Hardware (CB) **My 107**  
**Process Development**  
 Industry Calls for Cost Reduction through Better Design Engineering **Ji 76**  
 NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**  
 System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**  
**Process Heat**  
 Matching Solar Systems to Industrial Needs (79-Sol-28) (A) **Ag 95**  
 The Solar Potential for Process Heat: A Commercialization Perspective (79-Sol-24) (A) **Ag 95**  
 Textile Drying Using Solar Process Steam (79-Sol-23) (A) **Ag 95**  
**Process Heat Applications**  
 Design of an HTGR for High-Temperature Process Heat Applications (79-JPGC-NE-2) (A) **D 96**

**Process Heating**Solar River Exploration (ES) **My 21****Process Industries**Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 99**Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) (A) **My 94**A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 98****Process Steam Loads**Co-Generation of Steam and Electrical Energy for a Manufacturing Plant as Affected by Economy of Scale (78-IPC-Pwr-4) (A) **Ja 91****Process Variables**Statistical Analysis of the Influence of Process Variables on Noise Generation in Impact Hot Forming (79-DET-29) (A) **N 111****Processed Refuse**Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97****Processing Plants**Packaged Processing Plants (IF) **S 64****Product Development**Changing Profile of R&D Chiefs (NB) **F 71**The Design Audit Concept in New Product Development (78-DE-W-2) (A) **F 128****Product Liability Engineer**Management of the Product Liability Engineer (78-WA/Mgt-4) (A) **Je 90****Product Reliability**RGP-A Most Effective but Simple Reliability-Assurance Tool (79-DET-116) (A) **D 107****Production Controls**Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Ja 97****Production Costs**Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102****Production Drop Forging**Die Temperatures During Production Drop Forging (78-WA/Prod-28) (A) **My 100****Production Engineering**Analysis of Operating Rules in a Computerized Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**

An Analysis of Thermal Cracking of Carbide Tools in Intermit-

tent Cutting (78-WA/Prod-22) (A) **My 100**An Analysis of Some Production Planning Practices (78-WA/Prod-13) (A) **My 99**Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **My 99**Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and Its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**Construction of Three-Piece Lapping Process (78-WA/Prod-7) (A) **Je 90**Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**Design of Computer Control for Manufacturing Systems (78-WA/Prod-14) (A) **My 99**Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**Development of a Hydraulic Chambered, Actively Controlled Boring Bar (78-WA/Prod-20) (A) **My 100**Die Temperature During Production Drop Forging (78-WA/Prod-26) (A) **My 100**Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**The Direct-Search Method in CNC Interpolators (78-WA/Prod-40) (A) **My 102**Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/Prod-26) (A) **My 100**

Failure of Cemented Carbide Tools When Executing Intermit-

tent Cuts (78-WA/Prod-17) (A) **My 99**Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**Gear Hobbing Torque and Power (78-WA/Prod-33) (A) **My 101**An In-Field Method for the Determination of the Normal Plastic Anisotropy (R) Value for Sheet Materials (78-WA/Prod-41) (A) **Je 90**An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**A Mathematical Model for Drill Point Design and Grinding (78-WA/Prod-35) (A) **My 101**On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/Prod-23) (A) **My 100**On the Mechanism of Chip Breaking (78-WA/Prod-21) (A) **My 100**A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**Optical Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Je 90**Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**Reverse Plastic Flow Associated With Plastic Indentation (78-WA/Prod-19) (A) **My 100**Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **My 99**Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/Prod-15) (A) **My 99**The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/Prod-18) (A) **My 99**Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101****Production Equations**The Production of Vorticity and Its Effects on the Flow in Centrifugal Compressor Impellers (79-GT-113) (A) **JI 96****Production Planning**An Analysis of Some Production Planning Practices (78-WA/Prod-13) (A) **My 99****Production Platforms**Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**Fabrication and Installation of Production Platforms in Shallow Open Sea Areas: A New Concept (78-Pet-70) (A) **F 127****Production Record**Bullish on Coal (ES) **My 21****Production Reliability**Characteristics of a Dry, Subsea Well Completion (78-Pet-41) (A) **F 124****Production Requirements**Analysis of Operating Rules in a Computerized Manufacturing System (78-WA/Prod-38) (A) **My 102****Production Risers**Deepwater Production Risers (78-Pet-13) (A) **F 122****Production Trend Analysis**Utilization of Computer Techniques in Analyzing Production Trend Problems (78-WA/Aero-16) (A) **Ap 101****Productive Management**Industrial and Institutional Waste Heat Recovery (CB) **Je 104****Productivity**A New Heuristic for Improving the Efficiency of Numerically Controlled Punch Presses (78-DET-86) (A) **Ja 90****Productivity (C)**The Productivity Parameter (C) **Ja 40****Productivity Factors**Productivity Factors in Large Plant Maintenance (78-WA/Mgt-5) (A) **Je 91****Productivity Improvement**Improving Productivity Through Engineering Administration (78-WA/Mgt-3) (A) **Je 91**Improving Productivity Through Efficient Engineering Management **Je 27**Measurement of Performance in an Engineering Environment (78-WA/Mgt-8) (A) **Je 91**"Right On" and Resonant (C) **F 55****Products Liability**Products Liability and the Reasonably Safe Product: A Guide for Management, Design, and Marketing (CB) **F 134****Professional Development**Causes and Cures of Obsolescence on the Job (EN) **Ap 66**The PDC is Listening **N 82****Professional Education**Engineering Schools (C) **My 44****Professional Employment**Guidelines Available (PS) **O 67****Professional Engineering Salaries**Engineers' Salaries **My 22****Professional Engineers**Advancement by Judgement **F 26**Engineers' Contributions (C) **JI 39**Engineers: Professionals, Professional Employees, or Employees? (PS) **F 77**How to Become a Professional Engineer (CB) **Ja 100**Mechanical Engineers Top Most-Wanted List (NR) **Je 84**More on Registration (C) **My 47**On Registration, Unification (C) **F 54****Professional Engineers Examinations**Engineering Fundamentals for Professional Engineers Examinations (CB) **D 109****Professional Ethics**Professional Affairs and Ethics **My 88****Professional Guidance**The Society of Women Engineers—Guidance for Initiates into "A Man's World" (NR) **My 62****Professional Minorities**Uneven Progress for Women and Minorities (NB) **Ja 59****Professional Pride**Are you a Potential ASME Dropout? (PS) **S 77****Professionalism**Objective, Objectivity (C) **Ja 40****Profile Measurements**Laser Doppler Anemometry at the Inlet of a Vertical Elutriator (79-Tex-9) (A) **D 100**Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94****Profile Surfaces**Blade-Row Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **JI 96****Programmable Assembly**A Survey of Economic Analysis for Programmable Assembly (78-WA/DSC-17) (A) **Ap 95****Programmable Calculators**Natural Frequencies and Mode Shapes of Multi-Degree-of-Freedom Systems on a Programmable Calculator (79-DET-36) (A) **N 112**Sourcebook for Programmable Calculators (CB) **D 109****Programmable Controllers**Move Toward Closed-Loop Control in Die Casting (BTR) **F 58****Programmable Mechanical Test Systems**A Family of Programmable Mechanical Test Systems (BTR) **O 49****Programming Techniques**Interactive Computer Methods for Design Optimization (78-DET-84) (A) **Ja 90**Microprocessor Training Aid (BTR) **My 53****Project Design**Hot Competition! (ES) **My 20****Project Information**Solar-Energy Bibliography (BTR) **Ap 57**

## Project Management

Nuclear Power, Volume 1—Power Plant Design, and Volume 2—Project Management (TL) **My 106**

## Project Overview

The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**

## Project Status

Status of Coal Gasification Program (78-PVP-46) (A) **S 96**

## Project Sunrise

Project Sunrise (78-WA/Aero-15) (A) **Ap 101**

## Projectile Impact

Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**

## Proliferation

HTGR Strategy for Reduced Proliferation Potential (78-WA/NE-11) (A) **Mr 89**

Nuclear Fuel Service Center Approach to Reducing Proliferation Potential (78-WA/NE-9) (A) **Mr 88**

## Propagation

Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**

Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**

## Property Effects

Fuel Property Effects on Combustor Performance (79-GT-178) (A) **Jl 102**

## Property Improvement

Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Jl 94**

## Proportional Amplifiers

Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers with Position Feedback (78-WA/DSC-3) (A) **Ap 93**

## Proppant

A New Proppant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**

## Propulsion Engines

Conceptual Design of an 80,000-shp Fossil-Fired Closed-Cycle Helium Turbine Propulsion System for Naval Ship Applications (79-GT-94) (A) **Ag 99**

## Propulsion System

Feasibility of an Isolated Reverse Turbine Concept for Marine Propulsion (79-GT-63) (A) **Jl 93**

Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Jl 98**

Torpedo Propulsion Systems (78-WA/Aero-13) (A) **Ap 101**

## Propulsion Technology

Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Jl 91**

## Propulsion Thrust

Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**

## Prosthetics

Artificial Leg With Natural Gait (BTR) **Ja 50**

Proszanski, A. On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

## Protective System Technology

High-Pressure Protective System Technology (79-ENAs-15) (A) **O 87**

## Protheses

Modelling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**

## Proton Beam

High Energy at Fermilab (ES) **S 20**

## Prototype Bearings

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**

## Prototype Data

Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**

## Prototype Control System

The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**

## Prototype House

On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**

## Prototype Model

Portable Solar Water Heater (BTR) **D 57**

## Prototype Monorotor Engine

Viscous Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**

## Prototype Program

Engine Life Usage Experience of YF17/YJ101 Flight and

Ground Testing (78-WA/GT-11) (A) **Ap 89**

Update on Fast Track (EN) **S 73**

## Prototype Reactor

Fusion Center (ES) **My 21**

## Prototype Recuperator

First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Jl 94**

## Prototype Refrigerator-Freezer

An Energy-Saving Appliance (ES) **Jl 20**

## Prototype Testing

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

The Value of Prototype Testing in the Development of In-Vessel Handling Machine for FFTF (78-WA/NE-3) (A) **Mr 87**

## Prototype Wheels

Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**

## Prototypes

Dynamic Analysis of a Prototype Wheel Balancer (79-DET-72) (A) **N 116**

## Proximity Spectra

Proximity Spectra of Oscillators Under Random Excitation (79-DET-80) (A) **N 116**

## Pseudo-Random Forces

A Pseudo-Random Noise Generator for Dynamic Response Testing of Offshore Structures (79-DET-42) (A) **N 112**

## Public Affairs

ASME in Public Affairs—Federal and State (Ed) **F 23**

## Public Affairs Forum

Engineers Public Affairs Forum (WW) **Jl 78**

## Public Policy Making

A Pragmatic Approach to the Engineer's Involvement in Public Policy Making (78-WA/TS-1) (A) **Je 94**

## Public Safety

America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 94**

## Public Solar Hot Water Heater

Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Ja 89**

## Public Transit Systems

Transportation Energy Trends (BTR) **Jl 41**

## Public Utilities

A National Park Story (ES) **Jl 21**

## Pulsatile Jets

Investigation of a Pulsatile Flowfield Downstream from a Model Stenosis (78-WA/Bio-6) (A) **Mr 91**

## Pulse Signatures

Stock Spectrum Ratios Applied to the Comparison of Pulse Signatures (79-DET-8) (A) **N 109**

## Pulverized-Coal Furnace

Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-156) (A) **Jl 100**

## Pump Vibration

Suggested Improvements in the Measurement of Pump Vibration for In-Service Inspection (78-WA/NE-5) (A) **Mr 88**

## Pumping Equipment

Design and Application of Feed-Water Pumping Equipment for Improved Availability in Cyclic Operation (79-JPGPC-Pwr-8) (A) **D 97**

## Pumping Power

Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**

## Pumps

Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 95**

Distributor Injection Pump, Type VE, Design and Examples for Application (78-DGP-7) (A) **Ja 87**

Efficiency and Amplification in Jet Pumps (78-WA/DSC-7) (A) **Ap 94**

High Temperature Testing of a Sodium Pump (78-WA/NE-12) (A) **Mr 89**

Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

Ice Source Heat Pumps (ES) **Jl 21**

Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**

An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) (A) **My 94**

Limitations of Solar Assisted Heat Pump Systems

(78-WA/Sol-1) (A) **Je 94**

Liquid Metal Pumps (ES) **Ap 20**

Magnetic Heat Pumps (BTR) **Ja 48**

Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**

Solar-Powered Pump (BTR) **O 43**

Some Considerations on the Application of Chain Drives to Diesel Engines (78-DGP-4) (A) **Ja 88**

Student Challenged to Improve Model Pumps (EN) **My 70**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**

The Value of Intentional Redundancy (C) **Je 44**

Water Pump Tests (IF) **My 59**

## Punch Presses

A New Heuristic for Improving the Efficiency of Numerically Controlled Punch Presses (78-DET-86) (A) **Ja 90**

## Purchase Considerations

Considerations for the Purchase of Gas Gathering Compressors (78-Pet-20) (A) **Ja 98**

## Purchasing Managers

Purchasing Managers Wary of Recession in 1979 (NRI) **Ja 56**

Purdy, L. R. Alternative Energy Sources and the Developing Nations (78-WA/TS-3) (A) **Je 94**

## Push-Pull Computer Cars

New Locomotive Hauled Push-Pull Computer Cars for Massachusetts Bay Transportation Authority (79-RT-2) (A) **Ag 96**

Putney, Z. C. Cast Semicrystalline Silicon for Solar Cells (79-Sol-16) (A) **Ag 94**; Unique Aspects of Terrestrial Photovoltaic System Design (79-Sol-14) (A) **Ag 94**

Puzak, P. P. Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) (A) **Ag 106**

## Pyrolysis

Noncatalytic Conversion of Biomass to Gasoline (79-Sol-29) (A) **Ag 96**

## Pyrolyzing Media

Ignition of Pyrolyzing Media under Convective Heating (79-HT-27) (A) **O 94**

## Q

Quade, R. N. Design of an HTGR for High-Temperature Process Heat Applications (79-JPGC-NE-2) (A) **D 96**

## Quadratic Elements

A Quadratic Finite Element for the Three-Dimensional Convective-Transport Equation (79-HT-50) (A) **N 103**

## Quality Assessment

Rating the Engineering Schools (EN) **Ap 67**

## Quality Control

Science of the Big Bend (BTR) **Jl 46**

## Quality Requirements

Utilization of Computer Techniques in Analyzing Production Trend Problems (78-WA/Aero-16) (A) **Ap 101**

## Quantitative Analysis

Revised Theory for the Quantitative Analysis of Fabric Hand (79-Tex-5) (A) **D 100**

## Quartz Abrasives

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) (A) **Ja 95**

Quattrone, P. D. Bosch: An Alternate CO<sub>2</sub> Reduction Technology (79-ENAs-32) (A) **O 89**; Development of the Electrochemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAs-33) (A) **O 89**

## Quenched Steels

Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94**

Quenlin, G. Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Jl 92**

Quigley, M. S. Physical Modeling of Electric Glass Melting Furnaces for High Level Waste Immobilization (79-HT-97) (A) **N 106**

## R

Rashtat, H. Gear Hobbing Torque and Power



(78-WA/Prod-33) (A) **My 101**; Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**

**Rabe, D.** Heat Pipe Mirrors for High-Power Lasers **My 34**

**Radar Altimeter Measurements**  
Earth Terrain Contouring by Satellite (BTR) **Mr 52**

**Radar Reflective Covering**  
Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**

**Radford, R. W.** Elections to Fellow Grade **Ap 87**; (recipient) Rail Transportation Award **Ja Cn-13**

**Radhamohan, S. K.** Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**

**Radial Diffusers**  
Distinctions Between Two Types of Self Excited Gas Oscillations in Vaneless Radial Diffusers (79-GT-58) (A) **Jl 92**

**Radial Face Seals**  
Hydrodynamically Effects in a Misaligned Radial Face Seal (78-Lub-12) (A) **Ja 94**  
Squeeze Effects in Radial Face Seals (79-Lub-10) (A) **D 103**

**Radial Flow Turbines**  
Application of Air-Ceramic Nozzle to Radial Flow Turbine (79-GT-96) (A) **Ag 98**

**Radial Forces**  
The Effect of Coning on Radial Forces in Misaligned Radial Face Seals (79-Lub-17) (A) **D 103**  
Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) (A) **Ja 94**

**Radial Loading**  
A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**

**Radial Nozzles**  
Design of Radial Nozzles in Cylindrical Shells for Internal Pressure (79-PVP-14) (A) **Ag 104**

**Radial Trucks**  
Conventional Versus Self-Steering Radial Trucks for High-Speed Passenger Trains (79-RT-3) (A) **Ag 96**

**Radiant Energy Transport**  
Radiant Energy Transport in Porous Media (79-HT-1) (A) **O 82**

**Radiant Heater**  
Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**

**Radiant Heating**  
Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**

**Radiation**  
Determination of Specific Heat of Meat (78-WA/HT-57) (A) **Mr 97**  
Fire Characteristics Under the Influence of External Radiation (79-HT-71) (A) **N 104**  
Radiation's Health Effects (BTR) **D 62**  
The Role of Radiation in Pressure Modeling of Upward Fire Spread (79-HT-28) (A) **O 94**

**Radiation Heat Transfer**  
Radiation Heat Transfer (CB) **Ja 100**  
The Use of Power Series Solutions in Radiation Heat Transfer and Thermal Network Analysis (79-HT-65) (A) **N 104**

**Radiation Induced Deposition**  
Stabilization of Crimp in Bulked Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Ja 92**

**Radiative Heat Transfer**  
Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Jl 101**

**Radiative Transfer**  
Radiative Transfer through an Isotropically Scattering Finite Medium with Reflecting Boundaries (79-HT-29) (A) **O 93**

**Radiator Systems**  
Modularity and Optimization in Fluid Loop Radiator Systems (79-ENAS-37) (A) **O 90**  
Radiator Heat Rejection Options for Shuttle Payloads (79-ENAS-18) (A) **O 87**

**Radiators**  
Modular Heat Pipe Radiators for Enhanced Shuttle Mission Capabilities (79-ENAS-17) (A) **O 88**  
Optimum Design of Spacecraft Radiators for Large Capacity or Long Duration Mission Applications (79-ENAS-10) (A) **O 87**

**Radio Telemetry**  
Telemetry for Turbomachinery **Mr 30**

**Radioactive Atoms**  
Decontaminating Reactor Components (BTR) **Mr 48**

**Radioactive Waste**  
Nuclear Power and Radioactive Waste: Sub-Seabed Disposal Option? (CB) **Ap 104**  
Optimization of Two Stage Evaporators for Minimizing Rad-Waste Entrainment (79-DET-26) (A) **N 111**

**Radioactive Waste Storage**  
Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 98**

**Radioisotope Generators**  
Radioisotope Generators for: Remote Areas (BTR) **N 58**

**Radioisotope Power Sources**  
Cooling a Radioisotope Power Source in the Space Shuttle Orbiter (79-ENAS-44) (A) **O 90**

**Radkiewicz, R. J.** Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**

**Rafalski, A.** The Special Requirements for Nuclear Application Standby Diesel-Generator Sets (78-DGP-6) (A) **Ja 96**

**Rafinejad, D.** Design of a 150-kW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Ja 95**

**Ragsdell, K. M.** Computational Enhancements to the Method of Multipliers (79-DET-77) (A) **N 116**

**Rahman, A. A.** Dropwise Condensation on Rough Aluminum Surfaces (78-WA/HT-42) (A) **Mr 96**; Thermionic Power Converters for Solar Energy (78-DET-74) (A) **Ja 89**; Thermoelectric Generators for Solar Energy Conversions (78-Pet-75) (A) **F 127**

**Rahrooh, G.** Transition Boiling Heat Transfer in a Vertical Round Tube (79-HT-47) (A) **N 102**

**Rail Barge Transportation**  
Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines (78-WA/MH-1) (A) **My 97**

**Rail-to-Barge Transportation**  
Rail-to-Barge Transportation of Coal (78-WA/MH-6) (A) **My 98**

**Rail Freight Vehicles**  
Analysis of Nonlinear Hunting Vibrations of Rail Vehicle Trucks (79-DET-25) (A) **N 111**

**Rail Passenger Vehicle**  
Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**

**Rail Transit Systems**  
Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

**Rail Transportation**  
The Abuse of Truck (78-WA/RT-15) (A) **My 93**  
Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**  
Consequences of Using O & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94**  
The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**  
Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**  
Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves (78-WA/RT-13) (A) **My 93**  
Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**  
Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**  
Hatch Hetchy's in Yosemite (C) **Ja 45**  
Latest Engineering in Tank Car Design (78-WA/RT-11) (A) **My 93**  
Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **My 93**  
Locomotive Response to Random Track Surface Irregularities (78-WA/RT-12) (A) **My 93**  
Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Cars and Equipment (78-WA/RT-14) (A) **My 93**  
Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**  
Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**  
Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**  
Tank Train—A High Volume Bulk Liquid Transportation System (78-WA/RT-9) (A) **My 93**

Tank Train—A Portable Bulk Liquid Tank Container for Intermodal Service (78-WA/RT-10) (A) **My 93**

The Train Operations Simulator (TOS)—A Tool for Railroad Accident Investigation (78-WA/RT-3) (A) **My 92**

**Rail Transportation Conference**  
"Close Headway" Operation for Bay Area Rapid Transit (BART) (79-RT-6) (A) **Ag 97**  
Conventional Versus Self-Steering Radial Trucks for High-Speed Passenger Trains (79-RT-3) (A) **Ag 96**  
High Adhesion Truck for Electric Locomotives (79-RT-7) (A) **Ag 97**  
Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**  
The Investigation of Locomotive Dynamics via a Large Degree of Freedom Modeling (79-RT-1) (A) **Ag 96**  
The LRC Coach Trucks and Suspension (79-RT-4) (A) **Ag 96**  
New Locomotive Hauled Push-Pull Computer Cars for Massachusetts Bay Transportation Authority (79-RT-2) (A) **Ag 96**  
A New Rigid Frame Truck (79-RT-5) (A) **Ag 96**

**Rail Transportation Safety**  
Latest Engineering in Tank Car Design (78-WA/RT-11) (A) **My 93**

**Rail Vehicle Operating Speed**  
Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**

**Railroad Accident Investigation**  
The Train Operations Simulator (TOS)—A Tool for Railroad Accident Investigation (78-WA/RT-3) (A) **My 92**

**Railroad Car Wheels**  
Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**

**Railroad Freight Cars**  
The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**

**Railroad Industry**  
Rails Still Ail (NR) **Jl 61**

**Railroad Systems**  
Railroad Safety Buffers (BTR) **S 52**

**Railroad Tank Car**  
Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**

**Railroad Trucks**  
Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**

**Railroads**  
History of the Cumberland Valley Railroad (1835-1919) (CB) **D 109**  
Iron Road to the West: American Railroads of the 1850s (CB) **S 111**

**Railway Cars**  
Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**

**Railway Engineering**  
Railway Engineering Progress—Cars and Equipment **Ag 28**  
Survey Committee Report on Railway Engineering Progress—Locomotives **Jl 35**

**Railway Freight Cars**  
Consequences of Using O & T Steels to Reduce Weight and Increase Service Life of Railway Freight (78-WA/RT-18) (A) **My 94**

**Railway Mechanical Engineering**  
Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Cars and Equipment (78-WA/RT-14) (A) **My 93**  
Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**

**Railway Tunnels**  
Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Ja 89**

**Railway Wheels**  
Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**

**Railways**  
Compact Diesel Engines in Traction Applications (78-DGP-8) (A) **Ja 87**

**Raj, K.** Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**

**Rajan, J.** Failure Analysis of Tubes with Wastages (79-PVP-113) (A) **S 103**

**Raja, P. P.** Fatigue Life Evaluation of Nuclear Compo-



- ments and Piping (79-PVP-16) (A) **Ag 104**
- Rallis, C. J.** A Numerical Model for Stirling Cycle Machines (79-GT-18) (A) **O 84**
- Ramachandra, S. M.** Noise Generated from Non-Uniform Clearance of Turbo-Compressors and Fans of Aircraft (79-DET-30) (A) **N 111**
- Ramachandran, A.** Flow Through Non-Circular Annular Passages (79-FE-12) (A) **O 65**
- Ramachandran, J.** Study of Metals Erosion in High Temperature Coal Gas Streams (79-GT-88) (A) **Ag 98**
- Ramalingam, S.** Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**
- Ramamurthy, A. S.** Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Je 89**; Dynamics Stress Analysis of a Spur Gear Tooth (79-DET-38) (A) **N 112**; In-Plane Vibration of Annular Disks Using Finite Elements (79-DET-100) (A) **D 105**; Velocity Exponent for Erosion and Noise Due to Cavitation (79-FE-9) (A) **O 85**
- Ranadive, A. Y.** Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Jl 103**
- Randall, S. E.** Optimum Vibration Absorbers for Linear Damped Systems (78-WA/DE-22) (A) **Mr 86**
- Random Excitation**  
Proximity Spectra of Oscillators Under Random Excitation (79-DET-80) (A) **N 116**
- Random Guideway Inputs**  
Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**
- Randomly Excited Structure**  
An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**
- Randomly Parametric System**  
Stationary Response of a Randomly Parametric Excited Nonlinear System (78-WA/APM-13) (A) **My 103**
- Ranganath, S.** Elastic-Plastic Stress Analysis and ASME Code Evaluation of a Bottomhead Penetration in a Reactor Pressure Vessel (79-PVP-17) (A) **Ag 104**
- Ranked Data**  
Use of a Probabilistic Design of the Maximum Entropy Distribution Based on Ranked Data (79-DET-51) (A) **N 114**
- Rankine Bottoming Cycle**  
Power from Waste Heat Streams—An Advanced Concept (BTR) **Ag 46**
- Rankine-Cycle Engine**  
New Rankine-Cycle Engine Design (BTR) **N 88**
- Rankine Cycle Systems**  
Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-6) (A) **Je 93**
- Rankine Engines**  
Solar Rankine Engines—Examples and Projected Costs (79-Sol-3) (A) **Ag 92**
- Rannenbergh, G. C.** Chilled Recirculation ECS for Aircraft (79-ENAS-5) (A) **O 86**
- Ranney, M. W. (author)** Fuel Additives for Internal Combustion Engines: Recent Developments (CB) **Mr 98**
- Rao, B. N.** Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**
- Rao, M. S. M.** Inelastic Analysis of Nonaxisymmetrically Heated Cylindrical Shells (79-PVP-8) (A) **Ag 104**
- Rao, R.** Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Jl 97**
- Rao, S. S.** Application of Extremal Distributions in the Design of Thermal Systems (79-DET-5) (A) **N 109**; Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) (A) **Mr 85**; Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) (A) **Je 90**; Optimum Design of Air-Conditioned Buildings (79-DET-119) (A) **D 107**; Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) (A) **Mr 85**
- Raper, C. D., Jr.** Use of Phytotrons in Assessing Environmental Requirements for Plants in Space Habitats (79-ENAS-28) (A) **O 89**
- Rastegar, J.** Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**; Internal-External Load-Displacement Characteristics of the In-Vitro Human Ankle Joint (79-Bio-3) (A) **S 108**; Relative Motion of the Tibia with Respect to the Foot During Internal-External Rotation of a Human Ankle (79-Bio-4) (A) **S 108**
- Rate Structure**  
Institutional Issues and Photovoltaics (ES) **S 20**
- Rauschenplat, H. C.** Thermal Transient Analysis in Layered Pressure Vessels (79-PVP-13) (A) **Ag 104**
- Reutenberg, M.** Matching of Turbocomponents Described by the Example of Impeller and Diffuser in a Centrifugal Compressor (79-GT/Isr-9) (A) **O 82**
- Ravignani, G. L.** Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Multi-Tool Machining Analysis—Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**
- Ravindranath, A.** Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Jl 104**
- Raw Food Products**  
Simulation of Heat and Moisture Transfer in Bulk Stored Raw Food Products (78-WA/HT-54) (A) **Mr 97**
- Raw Ore**  
Treatment of Molybdenite Ore Using a 2-kW Solar Furnace (79-Sol-22) (A) **Ag 94**
- Ray, C. D.** Design and Development of a Trace Contaminant Removal Canister for Spacelab (79-ENAS-16) (A) **O 87**
- Ray, G.** Clinical Implications of Pressure-Deformation Analysis of the Aortic Arch with Local Variations in the Elastic Property (79-Bio-5) (A) **S 108**; In Vivo Constitutive Properties of the Passive Left Ventricular Myocardium (78-Bio-6) (A) **S 108**
- Ray, J.** The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**
- Ray, S. R.** An Analysis of the Heat Transfer Mechanisms in Horizontal Flame Propagation (79-HT-25) (A) **O 93**
- Rayburn, T.** Ockham's Razor and the Helicentric Model (C) **S 50**
- Raymond, L. P.** Initial Investigations of a Shallow-Layer Algal Production System (79-Sol-34) (A) **Ag 98**
- Reaction Control Subsystem**  
The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**
- Reaction Control System Thrusters**  
Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**
- Reaction Rate Measurement**  
The Kinetics of Ironite Sponge H<sub>2</sub>S Reactions (78-Pet-76) (A) **F 127**
- Reactor Core Problems**  
Statistical Filter Warnings of Reactor Core Problems (BTR) **N 83**
- Reactor Vessels**  
Reactor Vessel Blowdown: Determination of Emergency Core Cooling Parameters (79-HT-83) (A) **N 105**
- Reactors**  
Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Jl 97**  
Development of an Improved Sabatier Reactor (79-ENAS-36) (A) **O 89**  
Experience in the Use of FBR Core Component Structural Design Criteria as Applied FTF (79-PVP-48) (A) **S 97**  
Fusion Center (ES) **My 21**  
Fusion Power Development: Status and Prospects (79-JPGC-NE-1) (A) **D 96**  
Inelastic Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-25) (A) **Ag 106**  
Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**  
Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Jl 97**  
Nuclear Power Plant (IF) **Ap 80**  
A Plus for the Breeder Reactor (ES) **N 32**  
Uranium from Seawater (ES) **Jl 20**  
Use of Vortex Diodes Applied to Post Accident Heat Removal Systems (79-HT-9) (A) **O 92**
- Reactors (BWR)**  
Elastic-Plastic Stress Analysis and ASME Code Evaluation of a Bottomhead Penetration in a Reactor Pressure Vessel (79-PVP-17) (A) **Ag 104**
- Reactors (CRBRP)**  
Progress on Clinch River (ES) **D 20**
- Reactors (CRBRP)**  
Design Considerations for CRBRP Heat Transport System Piping Operating at Elevated Temperatures (79-NE-5) (A) **S 105**  
Impact of Clinch River Breeder Reactor Plant on Breeder Research and Development Programs (79-JPGC-NE-5) (A) **D 97**  
Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**  
Structural Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-68) (A) **S 98**  
Testing of the CRBRP Direct Heat Removal Service in a 1/21 Scale Model (79-HT-5) (A) **O 91**
- Reactors (FBR)**  
The Analytical and Experimental Studies on the Structural Design for the Absorber Tube (79-PVP-111) (A) **S 103**  
Perceptions of Risk and Timing in Breeder Development Decisions (79-JPGC-NE-4) (A) **D 96**
- Reactors (HTGR)**  
Design of Elevated Temperature Piping for Advanced Nuclear Plants (79-NE-7) (A) **S 105**  
HTGR Strategy for Reduced Proliferation Potential (78-WA/NE-11) (A) **Mr 89**  
Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 90**
- Reactors (HWR)**  
Resource Utilization and Design Aspects of the Heavy Water Reactor (78-WA/NE-7) (A) **Mr 88**
- Reactors (LMFBR)**  
Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**  
A Comparative Assessment of the LMFBR and Advanced Converter Fuel Cycles (79-JPGC-NE-3) (A) **D 96**  
Design Considerations in Liquid Metal Fast Breeder Reactor Upper Internals Structures (79-PVP-34) (A) **Ag 106**  
Dynamic Simulation of LMFBR Plant Under Natural Circulation (79-HT-6) (A) **O 91**  
Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBR Pressure Vessels (79-PVP-59) (A) **S 98**  
Experimental Study of the Transition from Forced to Natural Circulation in EBR-II at Low Power and Flow (79-HT-10) (A) **O 92**  
A High Reliability Straight Tube LMFBR Steam Generator Design (79-NE-4) (A) **S 104**  
An IHX Design for Pool Type LMFBR System Application (79-NE-3) (A) **S 104**  
Impact of Building Design on Auxiliary Liquid Metal Piping (79-NE-8) (A) **S 105**  
Influence of Core Assembly Refueling Requirements on LMFBR Core System Design (79-PVP-33) (A) **Ag 106**  
Overview of Fuel Element Design **Ap 30**  
Preliminary Analysis and Screening Criteria for Elevated Temperature Piping (79-NE-6) (A) **S 105**  
Post-Scram LMFBR Heat Transport System Dynamics (79-HT-8) (A) **O 92**  
Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**
- Reactors (PWR)**  
A New Computer Code for the Estimation of the Probability of Failure of PWR Pressure Vessels (79-PVP-118) (A) **S 103**
- Reactors (SSCR)**  
Resource Utilization and Design Aspects of the Spectral Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**
- Real-Time Programming**  
Real-Time Programming with Microcomputers (CB) **Ap 104**
- Reardon, J. D.** Development of a New Flame Sprayed Erosion Resistant Abradable Coating System (78-WA/GT-6) (A) **Ap 89**
- Receiver Configuration**  
Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Jl 93**
- Receiver Performance Data**  
Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Je 95**
- Receiver Tubes**  
Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes

ponents (BTR) Mr 48

... ..

... ..

UCT-26) (A) N 111

... ..

... ..

TankTrainer—A Portable Bulk Liquid Tank Container for  
Intermodal Service (78-WA/RT-10) (A) Mr 93

... ..

... ..

... ..

Conventional Versus Self-Steering Radial Trucks for High-  
Speed Passenger Trains (79-RT-3) (A) Ag 96

High Adhesion Truck for Electric Trolleybuses (79-RT-7)

nents and Piping (79-PVP-16) (A) Ag 104

... ..

... ..

... ..

... ..

... ..

... ..

(79-Bic 3) (A) S 100. Relative Motion of the Taxis with  
... ..

... ..

... ..

... ..

... ..

... ..

... ..

Reacto  
Design

... ..

... ..

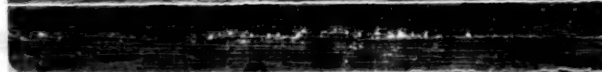
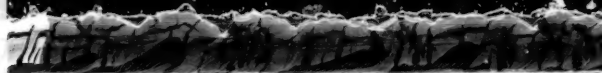
... ..

... ..

... ..

... ..

## Breeders' Reactor Plant Sorum, A. mpe. (70-16A, 105-4)



Comment: See Case M-15-172-GT-111(A) Jo C

**Need:**

- (78-WA/Sol-3) (A) **Je 94**
- Recessed Threaded Fasteners**  
Head Strength Evaluation of Recessed Threaded Fasteners (79-DET-117) (A) **D 107**
- Recession**  
Purchasing Managers Wary of Recession in 1979 (NR) **Ja 55**
- Rechter, H.** Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Je 99**
- Reciprocating Engine**  
Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) (A) **Ap 101**
- Reciprocating Engine/Compressor Maintenance**  
Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**
- Recirculation**  
Chilled Recirculation ECS for Aircraft (79-ENAS-5) (A) **O 85**
- Recirculation Test Facility**  
Augmented Vected Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Je 99**
- Recirculatory Flows**  
Heat Transfer in Turbulent Recirculatory Flows Affected by Buoyancy Forces in Rectangular Cavities (79-HT-77) (A) **N 105**
- Reclamation Plants**  
A Review of Solid Waste Resource Recovery Technology: Appraisal of Operations and Economics with Assessment and Economics with Assessment of Newly-Developed Processing (79-ENAS-40) (A) **O 90**
- Recoil Mechanisms**  
Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**
- Recovery Data**  
Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**
- Recovery Methods**  
Oil's Well That Ends Well (BTR) **Ap 51**
- Recovery Station**  
Offshore NGL Recovery Project (IF) **O 52**
- Recovery Systems**  
Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**
- Rectangular Cells**  
Effect of Cell Size on Natural Convection in High L/D Tilted Rectangular Cells Heated and Cooled on Opposite Faces (78-WA/HT-5) (A) **Mr 93**
- Rectangular Composite Material Plates**  
Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**
- Rectangular Enclosures**  
Experimental Investigation of Transient Asymmetric Heating in Vertical and Inclined Rectangular Enclosure (79-HT-90) (A) **N 106**
- Rectangular Plates**  
Natural Frequencies of Clamped Orthotropic Rectangular Plates With Varying Thickness (78-WA/APM-9) (A) **My 104**
- Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-16) (A) **N 110**
- Rectangular Prismatic Bodies**  
On the Motion of Rectangular Prismatic Bodies (79-FE-3) (A) **O 84**
- Recuperative Gas Cycles**  
Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-80) (A) **Je 95**
- Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Je 97**
- Recycling Methods**  
Cryogenics: Applications Unlimited (BTR) **Je 50**
- Reddy, C. S.** Double-Diffusive Convection in an Infinitely Tall Slot (78-WA/HT-8) (A) **Mr 93**
- Redekop, D.** Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**
- Redican, J. M.** Radiative Transfer through an Isotropically Scattering Finite Medium with Reflecting Boundaries (79-HT-29) (A) **O 83**
- Reduced Productivity**  
Productivity (C) **Ap 42**
- Reduction Rate**  
NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Je 92**
- Reduction System**  
Catalytic Reduction of Nitrogen Oxides Emitted from Stationary Sources (78-Pet-29) (A) **F 122**
- Reed, R. J.** In Search of Optimum Fuel Savings (78-WA/Ener-1) (A) **Je 92**
- Reef Contour**  
Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**
- Reeled Pipe Method**  
Metallurgical Studies of Deepwater Pipeline Laid by Reeled Pipe Method (78-Pet-55) (A) **F 125**
- Reflecting Boundaries**  
Radiative Transfer through an Isotropically Scattering Finite Medium with Reflecting Boundaries (79-HT-29) (A) **O 83**
- Refueling**  
Heat Transfer Immediately Downstream of the Quench Front During Refueling (79-HT-48) (A) **N 102**
- Refrigerants**  
Nucleate Boiling Performance of Refrigerants and Refrigerant-Oil Mixtures (79-HT-79) (A) **N 105**
- Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) (A) **Mr 85**
- Refrigeration Compressors**  
Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**
- Refueling**  
Influence of Core Assembly Refueling Requirements on LMFBR Core System Design (79-PVP-33) (A) **Ag 106**
- Refuge Engineers**  
Refuge Engineers, Aided by ASME Members, Begin Careers in New World **Je 80**
- Refuse-Burning Plants**  
Municipal Incinerator an Environmental Success (BTR) **F 81**
- Refuse Derived Fuels**  
Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**
- Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**
- Refuse-Incinerating Power Station**  
Refuse-Incinerating Power Station (IF) **Ap 81**
- Regenerative Blowers**  
An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) (A) **My 94**
- Regional Monotonicity**  
Regional Monotonicity in Optimum Design (79-DET-97) (A) **D 105**
- Registration**  
More on Registration (C) **My 47**
- On Registration, Unification (C) **F 54**
- Service Determines Image (C) **F 54**
- Regenerators**  
Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Je 104**
- Measured Effects of Flow Leakage on the Performance of the GT-225 Automotive Gas Turbine Engine (79-GT-3) (A) **Ag 97**
- Regulations**  
Effects of Clean Air Act Amendments of 1977 on Construction or Modification of Natural Gas Processing Plants (78-Pet-10) (A) **Je 97**
- The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Je 91**
- Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**
- Energy Tax Proposed (C) **My 46**
- Environmental Laws—Fundamental Tensions (WW) **Ap 70**
- EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-18) (A) **Ja 88**
- How ASME Takes a Stand (WW) **F 78**
- Letter to a Student (WW) **Je 72**
- Matters of Judgment (C) **Je 44**
- OSHA—New Directions **F 78**
- Our "Do-Something" EPA (C) **Ap 43**
- Return to the Stone Age (C) **F 55**
- Regulatory Constraints**  
Major Considerations in the Design and Engineering of
- Cogeneration Facilities (79-GT-151) (A) **Je 96**
- Reheat Gas Turbine**  
Steam-Cooled Blading in a Combined Reheat Gas Turbine Reheat Steam Turbine Cycle: Part I—Performance Evaluation (79-JPGC-GT-2) (A) **D 99**; Part II—Design Considerations (79-JPGC-GT-3) (A) **D 99**
- Reheat Gas Turbine Cycle**  
The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**; Part II—The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**
- Reheat Steam Cycles**  
Double Reheat Steam Cycles (ES) **N 32**
- Rehfield, L. W.** A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**
- Reich, M.** Failure Analysis of Tubes with Wastages (79-PVP-113) (A) **S 103**
- Reid, R. G.** Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Je 94**
- Reider, S. B.** Evaluation of Laminated Porous Wall Materials for Combustor Liner Cooling (79-GT-100) (A) **Ag 95**
- Reifender, K. L.** Investigation of Characteristic Damage States in Composite Laminated (78-WA/Aero-4) (A) **Ap 100**
- Reihman, T. C.** Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 94**
- Relativity**  
The Beauty of Einstein's Thought (BTR) **Je 46**
- Relay Systems**  
Move Toward Closed-Loop Control in Die Casting (BTR) **F 58**
- Reliability**  
Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**
- Reliability as a Materials Property (78-WA/Mat-1) (A) **Mr 88**
- The "Second Generation" LM2500—An Example of High Level of Reliability/Availability with Low Life-Cycle Costs (79-GT-79) (A) **Ag 98**
- Reliability Analysis**  
Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Je 90**
- Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) (A) **Mr 85**
- Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**
- Reliability Analysis of Truss Structures by Using Matrix Method (79-DET-113) (A) **D 106**
- Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**
- Reliability Assessment**  
Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Je 95**
- Reliability Design**  
Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Je 104**
- Reliability Evaluation**  
An Energy-Saving Appliance (ES) **Je 20**
- Reliability and Maintainability**  
1979 Reliability and Maintainability Symposium, review (NR) **Mr 61**
- R & M to be Discussed in D.C. (NR) **Ja 58**
- Reliability Policy**  
Reliability and Optimal Replacement via Coefficient of Variation (79-DET-108) (A) **D 106**
- Reliability Prediction**  
Reliability Prediction Techniques for Second Generation Marine and Industrial Gas Turbines (79-GT/Isr-3) (A) **O 82**
- Reliability Testing**  
Effective Reliability Testing and Growth Measurement (78-WA/Aero-21) (A) **Ap 102**
- Reliability Tool**  
RGP-A Most Effective but Simple Reliability-Assurance Tool (79-DET-116) (A) **D 107**
- Reliable Procedure**  
Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 125**
- Reliable Systems**  
Applying Plastics in a Highly Reliable, Low Cost Cooling System for Microelectronics (78-DE-W-3) (A) **F 128**



### Remote Work Design

Design for Remote Work in the Deep Ocean  
(78-WA/OCE-4) (A) **F 130**

### Removal Process

Electrochemical Grinding of WC-Co Cemented Carbides  
(78-WA/Prod-26) (A) **My 100**  
NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas  
Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**

### Renewable Energy

Renewable Energy Sources (C) **S 50**

### Renewable Energy Resources

Renewable Energy Resources. Full Reports to the Conservation Commission (CB) **Je 104**

Renfrew, D. W. Evaluation of Particulate Emissions from  
Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**

### Replacement Theory

Cost Optimization Models for Planned Replacement  
(79-DET-115) (A) **D 107**

### Reproducible Determinations

Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Je 97**

### Repulsive Surfaces

Study of a Vibratory Feeder with Repulsive Surface Having  
Directional Characteristic (79-DET-27) (A) **N 111**

### Research

Advancement by Judgment (78-WA/Mgt-2) (A) **Je 90**

Air Policy Analysis for the Development of Western Energy  
Resources (78-TS-4) (A) **F 129**

Can Nozzle Design be Effectively Improved for Drilling  
Purposes (78-Pet-51) (A) **F 125**

Capabilities to Determine Rock Properties at Simulated  
Geothermal Conditions (78-Pet-31) (A) **F 123**

Catalytic Converter Research (EN) **Ji 67**

A Comparison of Environmental Effects on Dynamic  
Behavior of Graphite/Epoxy Composites with Aluminum  
Alloys (78-WA/Aero-10) (A) **Ap 101**

Conservationist Award (ES) **F 24**

Cryogenic Plant for Fusion Research (IF) **Ji 55**

Discrete Parts Assembly Automation—An Overview  
(78-WA/DSC-11) (A) **Ap 94**

Experience with Experimental Applications of Multivariable  
Computer Control (78-WA/DSC-26) (A) **Ap 96**

Experimental Investigation of the Buckling Characteristics of  
a Beaded Skin Panel for a Hypersonic Aircraft—Including Comparisons with Finite Element  
and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**

Fusion Program (EN) **My 70**

Geothermal Energy (EN) **Ji 68**

The Impact of Solar Power (ES) **My 21**

Investigation of Warm Prestress for the Case of Small ΔT  
During a Reactor Loss-of-Coolant Accident  
(79-PVP-62) (A) **S 98**

Latest Engineering in Tank Car Design (78-WA/  
RT-11) (A) **My 93**

Measurement of the Elastic-Plastic Boundary Around  
Coldworked Fastener Holes (78-WA/APM-2) (A) **My 103**

MHD Generator Runs 500 Hours (NB) **Ji 65**

MHD Test Record (ES) **Ji 21**

Microcomputer Monitors Heart (BTR) **Je 47**

New Fusion Experiments (ES) **F 25**

Nuclear Plant Safety (EN) **Ji 67**

Nuclear Waste Storage (NB) **Ji 65**

Solar Electric Generator (IF) **Je 58**

Theoretical and Experimental Research on Hydraulic Fracturing  
(78-Pet-49) (A) **F 125**

### Research Boiler

Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion  
Experiments (78-WA/Fu-7) (A) **Je 97**

### Research and Development

Air-Storage Gas-Turbine Plant (IF) **S 64**

Artificial Reefs (ES) **Ap 20**

An Award for Acoustic Flowmeters (ES) **O 18**

Cascading Solar Cells May Increase Efficiencies (BTR) **Ap 47**

Changing Profile of R&D Chiefs (NB) **F 71**

Cheap Hydrogen (ES) **Ji 21**

Coal-Feeding Systems (ES) **Ap 21**

Coal Liquefaction R&D (BTR) **My 54**

Coal in Transition (ES) **O 19**

Combined-Cycle Power Plants (ES) **Je 18**

The Combined Reheat Gas Turbine/Steam Turbine Cycle  
Part I—A Critical Analysis of The Combined Reheat Gas  
Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**

Commercial Superconducting Generator (BTR) **Je 50**

A Compact Closed Cycle Gas Turbine for Marine Propulsion

(79-GT-62) (A) **Ji 92**

Detergents Clean the Air (NB) **Ji 64**

Development of a Hydraulic Chambered, Actively Controlled

Boring Bar (78-WA/Prod-20) (A) **My 100**

Earthquake Research (EN) **Je 68**

The Effect of Environment Regulations on the General  
Electric Research and Development Program for Combustion  
Turbines Using Coal-Derived Fuels (79-GT-41)

(A) **Ji 91**

Efficient Machir: Save Energy (NB) **Ap 65**

On Energy Invention Funding (C) **Ji 38**

Environmental Effects of Burning Wastes (BTR) **S 61**

A Family of Programmable Mechanical Test Systems  
(BTR) **O 49**

Geopressured Water/Gas as Potential Energy Source  
(BTR) **Ap 48**

Home Sweet Solar Home! (ES) **My 21**

The Hybrid Car (ES) **Ji 20**

Hydrazine Monopropellant Reciprocating Engine Development  
(78-WA/Aero-12) (A) **Ap 101**

Improved Transformer Efficiency (ES) **O 19**

Industry Calls for Cost Reduction through Better Design  
Engineering **Ji 76**

Low-Cost Solar Cells (ES) **Ji 26**

Magnetic Heat Pump (BTR) **Je 48**

MHD Subsystem (ES) **O 19**

Multipurpose Wind Energy System (BTR) **S 59**

Needed: Bright Ideas! (ES) **My 21**

New Rankine-Cycle Engine Design (EN) **D 77**

New Sizing Agent Can Reduce Pollutants (EN) **Ji 68**

New Solar Collector (IF) **Je 54**

New System Samples Stack Gases (EN) **O 61**

Packaged Processing Plants (IF) **S 64**

Partners in Fusion (ES) **S 20**

Please Note... (C) **O 41**

Radiation's Health Effects (BTR) **D 62**

R&D Factors and a Proposed National Program for Mechanical  
Technology (79-DET-66) (A) **N 113**

A Reliable Spine Coupling (78-WA/Aero-11) (A) **Ap 101**

Research for Better Fuel Efficiency (BTR) **D 59**

Resonance Equalization in Feedback Control Systems  
(78-WA/DSC-24) (A) **Ap 96**

Science Center Recommended for New Jersey (NB) **Ap 65**

The Scroll Machine—An Old Principle With a New Twist **D 46**

Small, Long-Lived Thermal Battery (BTR) **O 44**

Solar Cells (EN) **D 78**

Steel for Coal-Conversion Plants (EN) **O 64**

Still Hope for Oil Shale (ES) **Ja 19**

Sulfur Eaters (ES) **S 57**

Superconducting Generator (ES) **Je 19**

Teleconferences, Electronic Mail in Future for Business  
(BTR) **Ap 50**

Texans Back Fusion (ES) **O 19**

Transportation Energy Trends (BTR) **Ji 41**

Uranium from Seawater (ES) **Ji 20**

Water-Cooled Gas Turbine Technology Development: Fuels  
Flexibility (79-GT-72) (A) **Ji 93**

### Research Developments

Textile Machinery Research 1948-1978 (78-Tex-8) (A) **Ja 92**

### Research Facility

Wind Tunnel Model Study of the Hot Exhaust Plume from the  
Compressor Research Facility at Wright-Patterson Air  
Force Base, Ohio (79-GT-186) (A) **Ji 103**

### Research Grants

Bio-Energy Research Grants (ES) **S 21**

Engineering Research Grants (NR) **O 57**

### Research Institute

Lehigh Establishes Research Institute (EN) **Je 68**

### Research Programs

Bone Disease Research Facility Opens (EN) **O 64**

Re-Producing (NB) **S 71**

1980 Research Associateship Programs (EN) **O 61**

Solar-Energy Bibliography (BTR) **Ap 57**

### Research Project

The Solar-Electric Heating and Cooling Experiment **Ja 25**

### Research Proposals

Solar Energy Research Proposals Wanted by DOE (EN) **D 76**

### Research Reports

OTA Sets Priorities (NR) **Ap 62**

### Research Ship

Seismic Survey Ship (IF) **Je 59**

### Reservoir Project

The Techniques Involved in the Design, Construction, and

Operation of a Waterflood Facility in South Louisiana  
Marshlands (78-Pet-7) (A) **Ja 97**

### Reservoirs

Wellhead Flow Predictions for Texas-Louisiana Geopressured  
Reservoirs (79-HT-70) (A) **N 104**

### Residential Heating

Home Heat and Hot Water from Ice (BTR) **Ap 46**

Solar Factors (C) **Ap 43**

### Residual Stress Field

Test of Thick Vessel with a Flaw in Residual Stress Field  
(79-PVP-29) (A) **S 96**

### Residual Stresses

An Analysis Procedure for Predicting Weld Repair Residual  
Stresses in Thick Walled Vessels (79-PVP-31) (A) **Ag 105**

An LEFM Analysis for the Effects of Weld Repair Induced  
Residual Stresses on the Fracture of the HSST ITV-8  
Vessel (79-PVP-30) (A) **Ag 105**

For Spring Materials: A Simple Test of Stress Relief Annealing  
**F 38**

### Resin Coating

A New Proppant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**

### Resonance Equalization

Resonance Equalization in Feedback Control Systems  
(78-WA/DSC-24) (A) **Ap 96**

### Resonant Stresses

Friction Damping of Resonant Stresses in Gas Turbine  
Engine Airfoils (79-GT-109) (A) **Ag 99**

### Resource Conservation

Re-Producing (NB) **S 71**

The Role of the Ceramic Heat Exchanger in Energy and  
Resource Conservation (79-GT-106) (A) **Ji 96**

### Resource Development

Air Policy Analysis for the Development of Western Energy  
Resources (78-TS-4) (A) **F 129**

### Resource Energy

Wind and Hydro (ES) **O 19**

### Resource Managers

Energy Technologies (ES) **Ap 21**

### Resource Usage

U. S. vs. German Energy Consumption (C) **Ap 43**

### Resource Utilization

Resource Utilization and Design Aspects of the Heavy Water  
Reactor (78-WA/NE-7) (A) **Mr 88**

Resource Utilization and Design Aspects of the Spectral  
Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**

### Response Control

Control of Seismic Response of Piping Systems and Components  
in Power Plants by Base Isolation (79-PVP-55)

(A) **S 97**

### Retirement Plan

When Will We Have LERA? (WW) **D 80**

### Retirement Survey

Pensions and Retirement—Are You Prepared? (NR) **Ji 64**

### Retrofit Installation

The Economics of Energy Management Systems in State  
Buildings in Florida (78-WA/PEM-1) (A) **My 95**

Retzlaff, K. M. Design and Operation of Large Fossil-Fueled  
Steam Turbines Engaged in Cyclic Duty  
(79-JPGC-Pwr-7) (A) **D 97**

### Reverse Osmosis System

"Zero Discharge" Wastewater (ES) **F 25**

### Reverse Plastic Flow

Reverse Plastic Flow Associated With Plastic Indentation  
(78-WA/Prod-19) (A) **My 100**

### Reverse Turbine Concept

Feasibility of an Isolated Reverse Turbine Concept for  
Marine Propulsion (79-GT-63) (A) **Ji 93**

### Reversible Chemical Reactions

The Storage and Regeneration of High Temperature Thermal  
Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System  
(79-Sol-20) (A) **Ag 94**

### Revelt, M. A.

In-Service Inspection (ISI)—The Role of the Third-Party Consultant **Ap 37**

### Reynolds, R.

The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications  
(78-WA/PEM-2) (A) **My 94**

### Reynolds, W. C.

Elections to Fellow Grade **Ap 87**

### Reynolds Analogy Factor

Heat Transfer to Plane Turbulent Wall Jet Discussion on the  
Reynolds Analogy Factor (79-HT-40) (A) **O 94**

### Reynolds Boundary Conditions

Effects of Geometry on Hydrodynamic Film Thickness  
(78-Lub-24) (A) **Ja 95**

### Reynolds Equation

A Generalized Short Bearing Theory (79-Lub-20) (A) **D 103**

Pressure Distribution from Experimental Data for Elastohydrodynamic Point Conjunctions (78-Lub-3) (A) **Ja 93**

### Reynolds Numbers

Base Pressure Associated with Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) (A) **S 108**

Constrained Flow Past Cavitating Bluff Bodies (78-WA/FE-11) (A) **Ja 89**

Experimental and Analytical Investigation of the Effects of Reynolds Number and Blade Surface Roughness on Multistage Axial Flow Compressors (79-GT-2) (A) **Ag 97**

Heat and Mass Transfer in Fixed Beds at Low Reynolds Numbers (79-HT-91) (A) **N 107**

Low Reynolds Number Effects on Sharp Cone Turbulent Heat Transfer Under Hypersonic Wind Tunnel Conditions (79-HT-89) (A) **N 106**

Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ja 98**

A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Ja 89**

Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ja 98**

A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) (A) **Mr 90**

### Reynolds-Stress Tensor

Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ja 98**

### Rewetting Phenomena

Effect of Flow Channel Orientation on Rewetting Phenomenon (78-WA/HT-31) (A) **Mr 95**

### Rewetting Processes

A Three-Dimensional Analysis for the Rewetting Process of Hot Channels (78-WA/HT-27) (A) **Mr 95**

### Rheological Finite Element

Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**

### Rheological Model

A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) (A) **Ja 94**

Rhodes, D. L. Wellhead Flow Predictions for Texas-Louisiana Geopressured Reservoirs (79-HT-70) (A) **N 104**

Rhodes, S. M. Analysis of Dynamically Loaded Floating-Ring Bearings for Automotive Applications (79-Lub-14) (A) **D 103**

Rhodes, A. F. The Ultimate Control Problem—A Wild Oil or Gas Well **Ja 29**

Rice, I. G. The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Ja 98**

Rice, I. G. The Combined Reheat Gas Turbine/Steam Turbine Cycle Part II—The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Ja 98**

Rice, I. G. Steam-Cooled Blading in a Combined Reheat Gas Turbine Reheat Steam Turbine Cycle: Part I—Performance Evaluation (79-JPGC-GT-2) (A) **D 99**

Rice, I. G. Steam-Cooled Blading in a Combined Reheat Gas Turbine Reheat Steam Turbine Cycle: Part II—Design Considerations (79-JPGC-GT-3) (A) **D 98**

Rice, R. C. Evaluation of Particulate Emissions from Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**

Rice, R. W. Fractography of Reaction-Sintered Si<sub>3</sub>N<sub>4</sub> (79-GT-97) (A) **Ag 99**

Richard, C. C. The Classroom Design of a COGAS Plant by Naval Systems Engineering Students (79-GT/1er-7) (A) **O 83**

Richard, C. E. Simplified Inelastic Analysis in Helical Coil Heat Exchanger Design (79-NE-2) (A) **S 104**

Richards, B. E. Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Ja 98**

Richards, C. D. Energy Conservation in Modern Pipelining (78-Pet-68) (A) **F 127**

Richardson, D. A. Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**

Richardson, J. A. Design Specifications for ASME Section III Nuclear Class 1 Piping (79-PVP-75) (A) **S 99**

Richey, R. J. Cross Reinforcement in a GR/EP Laminate (78-WA/Aero-7) (A) **Ap 100**

Rickenbach, D. H. Fillet Size in a Liquid Jet (79-FE-1) (A) **O 84**

Richter, D. L. The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**

### Ride Quality

The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-2) (A) **My 93**

Rie, H. Baseline Data on Film Coefficient for Heating Isobutane Inside a Tube at 4.14 MPa (600 psia) (79-HT-14) (A) **O 92**

Rieger, N. F. Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 88**

Rieks, K. L. Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**

### Rigid Bodies

Dynamics of Multirigid-Body Systems (78-WA/APM-10) (A) **My 104**

### Rigid Body Motion

Technology Transfer in Biokinematics of Human Spine (78-DET-88) (A) **Ja 90**

### Rigid-Body Rotation

Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) (A) **Mr 91**

### Rigid Frame Trucks

A New Rigid Frame Truck (79-RT-5) (A) **Ag 96**

Rinehart, R. E. Locomotive Response to Random Track Surface Irregularities (78-WA/RT-12) (A) **My 93**

### Ring Groove

Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**

Piston Ring Scuffing—A Multi-Parameter Investigation (78-DGP-14) (A) **Ja 87**

### Ring Life Lengthened

Development of Piston Rings for High Speed Engines in Europe (78-DGP-18) (A) **Ja 88**

### Ring Lubrication

Progress in Understanding and Control of Ring Lubrication (78-DGP-25) (A) **Ja 89**

### Ring Spinning

High-Frequency Yarn Tension Variations in Spinning (79-Tex-6) (A) **D 100**

Rio, R. A. Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Ja 92**

### Riser Stresses

A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 128**

### Risers

Deepwater Production Risers (78-Pet-13) (A) **F 122**

### Risk Analysis

Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**

### Ritz Averaging Method

The Application of the Ritz Averaging Method to Determining the Response of Systems with Time Varying Stiffness to Harmonic Excitation (79-DET-20) (A) **N 110**

Ritzo, V. Resonance Equalization in Feedback Control Systems (78-WA/DSC-24) (A) **Ap 96**

### Road Inputs

Realistic Prediction and Control of Vehicle Noise Resulting from Road Inputs (79-DET-75) (A) **N 118**

### Road Vehicles

Compact Self-Damped Pneumatic Isolators for Road Vehicles (79-DET-101) (A) **D 105**

Robert, K. Q. Laser Doppler Anemometry at the Inlet of a Vertical Extruder (79-Tex-9) (A) **D 100**

Robert, K. Q., Jr. A Phase-Velocity Description of Aerodynamic and Electrostatic Transport of Cotton Fibers and Trash (79-Tex-1) (A) **D 99**

Roberts, C. C. Microcomputer Application in Engineering Design (78-DET-85) (A) **Ja 90**

Roberts, J. B. An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**

Roberts, P. B. Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Ja 91**

Soot and the Combined Cycle Boiler (79-GT-67) (A) **Ja 93**

Roberts, P. J. Use of Vortex Diodes Applied to Post Accident Heat Removal Systems (79-HT-9) (A) **O 92**

Roberts, W. B. Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ja 98**

An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Ja 98**

Roberts, W. E. Test and Analysis of the ASALM-PTV Insulated Combustion Chamber (79-ENA-21) (A) **O 88**

Robertson, J. M. Elections to Fellow Grade **My 98**

Spectral and Probability-Density Nature of Square-Pyram Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Ja 88**

Robertson, R. C. Review of Waste Heat Rejection from Geothermal Power Plants (79-HT-15) (A) **O 92**

Robidart, C. M. Conceptual Design of Large Heat Exchangers for Ocean Thermal Energy Conversion (78-WA/HT-32) (A) **Mr 95**

Robinson, R. A. Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) (A) **Mr 87**

Robinson, T. F. Techniques of Solid Waste Fuel Combustion (79-IPC-Pwr-3) (A) **D 100**

### Robot Arm Design

Robot Arms for Assembly (78-WA/DSC-37) (A) **Ap 99**

### Robot-Like Devices

Space Robot (BTR) **Ja 41**

### Robots

Giant Robot Inspects Nuclear Reactor Vessels (BTR) **N 99**

Micromouse: A Robot with Unlimited Future (BTR) **S 51**

Self-Navigating Robot (BTR) **Ag 48**

### Rock Formation

Permeability Near Oil Wells (BTR) **My 50**

### Rock Geothermal Energy Systems

The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**

### Rock Mechanics Evaluation

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 128**

### Rock Properties

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**

### Rock Salt

A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**

### Rocks

Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**

### Rod Bundles

Low Pressure Rod Bundle Critical Heat Flux Tests (79-HT-46) (A) **O 95**

Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) (A) **O 94**

Rodabaugh, E. C. A Comparison of Fatigue Test Data on Piping with the ASME Code Fatigue Evaluation Procedure (79-PVP-92) (A) **S 100**

Rodriguez, D. D. Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

Rodgers, C. Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit (78-WA/GT-2) (A) **Ap 88**

Starting Torque Characteristics of Small Aircraft Gas Turbines and APU's (79-GT-95) (A) **Ja 96**

Rohde, O. A. The Production of Food, Energy and Fresh Water from the Sea through Artificial Upwelling (79-Sol-19) (A) **Ag 94**

Rogers, D. B. More on the Black M.E. at Tuskegee (C) **Ag 40**

Rogers, J. T. Contact Conductance Between Parallel Tubes (79-HT-85) (A) **N 106**

Rogers, L. C. Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ja 101**

Rogers, V. C. Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) (A) **Ap 96**

Rogerson, J. S. Instabilities in the Exothermic Oxidation of Carbon Monoxide on a Platinum Surface (79-HT-56) (A) **N 103**

Rohde, A. M. A Generalized Short Bearing Theory (79-Lub-20) (A) **D 103**

Rohde, S. M. Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**

Roller Bearings

An Optical Study of the Lubrication of a 65-mm Cylindrical Roller Bearing (78-Lub-27) (A) **Ja 96**

Roller Bearing Design

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**

## Roller Bending Machine

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**

## Roller Coaster Operation

Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**

## Roller Cone Cutter

A Study to Determine Roller Cone Cutter Offset Effects at Various Drilling Depths (78-Pet-23) (A) **Ja 99**

## Rolling Bearings

Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Ji 95**

## Rolling Element Bearings

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) (A) **Ja 93**

Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji 93**

Dynamics of Rolling-Element Bearings Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) (A) **Ja 95**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) (A) **Ja 96**; Part III: Ball Bearing Analysis (78-Lub-32) (A) **Ja 96**; Part IV: Ball Bearing Results (78-Lub-33) (A) **Ja 96**

**Roman-Lazo, C. E.** Selection and Sizing of Velocity Actuated Subsurface Safety Valves (78-Pet-8) (A) **Ja 97**

**Rongved, L.** Stress in Glass Fibers Induced by the Draw Force (78-WA/APM-21) (A) **My 104**

## Roof Structures

The All-Aluminum Polyframe Dome Structures: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**

**Rooke, J. H.** The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**

**Root, R. R.** Computational Enhancements to the Method of Multipliers (79-DET-77) (A) **N 116**

## Rope Pulleys

Dynamically Optimum Design of Rope-Pulley Spacing Mechanism (79-DET-34) (A) **N 112**

**Rose, R. S.** System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**

**Rosen, A.** The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) (A) **S 106**

**Rosen, S.** The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Ji 94**

**Rosbach, R. J.** Alternate Ways of Using Bottoming Cycle Power in Pipeline Gas Compressor Stations (79-GT-201) (A) **Ji 105**

**Rossetto, S.** Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**

**Rotary Bed Drying**  
Rotary Bed Solid Desiccant Drying: An Analytical and Experimental Investigation (79-HT-19) (A) **O 93**

**Rotary Motion Transmission**  
Transmitting Rotary Motion at an Angle (BTR) **Ji 47**

**Rotary Motions**  
Two or More Rotary Outputs From One Input (BTR) **Je 55**

**Rotary Printing Equipment**  
Application of Impact Damping to Rotary Printing Equipment (79-DET-82) (A) **N 116**

**Rotary Switch**  
A High-Speed Time Sharing Rotary Switch (78-WA/DE-20) (A) **Mr 86**

**Rotated Cylinder**  
Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Je 89**

**Rotating Blade Packet**  
Dynamic Analysis of Rotating Asymmetric Cross-Section Blade Packet (79-DET-93) (A) **D 105**

**Rotating Blades**  
Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Ji 93**

Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ji 98**

Disc Vibration-Rotating Blade and Stationary Vane Interaction (79-DET-83) (A) **N 117**

Finite Element Analysis of Rotating Prehatched Asymmetric Cross-Section Blades (79-DET-95) (A) **D 105**

**Rotating Disks**  
Generalized Laminar Heat Transfer From the Surface of a Rotating Disk (78-WA/HT-29) (A) **Mr 95**

Mass Transfer at the Edge of a Rotating Disk (79-HT-34) (A) **O 95**

Vibration Characteristics of Asymmetric Cross-Section Bladed Disk Under Rotation (79-DET-94) (A) **D 105**

**Rotating Dome**  
Astronomical Observatory Dome Bearing Design (78-WA/DE-19) (A) **Mr 86**

**Rotating Hollow Shaft**  
Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**

**Rotating Inlet Guide Vanes**  
Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Je 100**

**Rotating Machines**  
A Fibre-Optic Laser-Doppler Probe for Vibration Analysis of Rotating Machines (79-GT-111) (A) **O 83**

**Rotating Roll**  
Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling (79-HT-80) (A) **N 104**

**Rotating Stalls**  
Compressor Rotating Stall in Uniform and Non-Uniform Flow (79-GT-181) (A) **O 84**

Numerical Investigations on the Generation and Development of Rotating Stalls (78-WA/GT-5) (A) **Ap 89**

**Rotating Tubes**  
The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 89**

**Rotating Water Table**  
Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 86**

**Rotation Units**  
Rotation Units (C) **My 44**

**Rotor Balancing**  
An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Ji 101**

**Rotor-Bearing Systems**  
Response Analysis of a General Asymmetric Rotor-Bearing System (79-DET-84) (A) **N 117**

**Rotor Bearings**  
The Dynamics of Rotor-Bearing Systems with Axial Torque—A Finite Element Approach (79-DET-68) (A) **N 115**

Stability Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (79-DET-63) (A) **N 113**

**Rotor Blade Transition**  
The CH-46 Rotor Blade Transition from Metal to Composite Materials (78-WA/Aero-9) (A) **Ap 101**

**Rotor Blades**  
A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Ji 103**

An Experimental Investigation of Film Cooling on a Turbine Rotor Blade (79-GT-32) (A) **Ag 97**

Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Ji 104**

Noise Generated from Non-Uniform Clearance of Turbo-Compressors and Fans of Aircraft (79-DET-30) (A) **N 111**

Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ji 98**

**Rotor Dynamics**  
Dynamic Reduction in Rotor Dynamics by the Finite Element Method (79-DET-70) (A) **N 116**

**Rotor Pedestal Foundation System**  
Unbalanced Response of a Large Rotor-Pedestal-Foundation System Using an Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**

**Rotor Performance**  
An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Je 96**

**Rotor Shaft System**  
Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

**Rotor Tip Clearance**  
Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.7-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Ji 91**

**Rotor Vibrations**  
Spline Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**

**Rotor Dynamic Analysis**  
Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical

Sections and Trunnions (79-DET-58) (A) **N 115**

## Rotors

Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Je 98**

Active Magnetic Bearings (BTR) **F 58**

Blade-Flow Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Ji 96**

Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) (A) **Mr 85**

Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Subsynchronous Vibration (79-GT-86) (A) **Ji 95**

Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit (78-WA/GT-2) (A) **Ap 88**

Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-88) (A) **N 117**

Development of an Automated Life Prediction System for Steam Turbine Rotors (78-WA/DE-15) (A) **Mr 86**

The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions (79-GT-93) (A) **Ag 99**

Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Ji 100**

Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) **N 115**

Forced Vibrations of a Single Stage Axial Compressor Rotor (79-GT-108) (A) **Ag 100**

Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **Ji 92**

Multipurpose Wind Energy System (BTR) **S 59**

Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) (A) **Mr 85**

Sensitivity of the Critical Speeds of Rotor to Changes in the Design (79-DET-54) (A) **N 114**

Spiral Vibrations Due to the Seal Rings in Turbogenerators Thermally Induced Interaction Between Rotor and Stator (79-DET-61) (A) **N 115**

Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Ji 99**

The Vibrational Behavior of a Turbine Rotor Containing a Transverse Valve (79-DET-67) (A) **N 115**

Viscous Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**

**Rotz, C. A.** Vortex Motions Induced by V-Grooved Rotating Cylinders and their Effect on Mixing Performance (79-FE-2) (A) **O 84**

**Rouch, K. E.** Dynamic Reduction in Rotor Dynamics by the Finite Element Method (79-DET-70) (A) **N 116**

**Rough Sliding Surfaces**  
Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) (A) **Ja 95**

**Rough Surfaces**  
Dropwise Condensation on Rough Aluminum Surfaces (78-WA/HT-42) (A) **Mr 96**

Effects of Asperities in Elastohydrodynamic Lubrication (79-Lub-6) (A) **D 102**

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Ja 96**

Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**

Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**

**Roughness Interaction**  
Micropolarity—Roughness Interaction in Hydrodynamic Lubrication (79-Lub-8) (A) **D 102**

**Round, G. F.** Nonparallel Effects on the Stability of Jet Flows (78-WA/APM-16) (A) **My 104**

**Rounds**  
A Probabilistic Model of Size Effect in the Fatigue Strength of Rounds in Bending and Torsion (79-DE-16) (A) **Ag 103**

**Roy, J. G.** Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**

**Rubber**  
K 79—Plastics and Rubber Expo (IF) **Ag 55**

**Rubber Bearings**  
The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**

**Rubber-Tired Transit Vehicles**  
Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**

**Rubbing**  
Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) (A) **Mr 85**



**Rubin, S.** Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**

**Rubio, A.** Why Registration? (C) **Ap 42**

**Ruh, R.** Fractography of Reaction-Sintered Si<sub>3</sub>N<sub>4</sub> (79-GT-97) (A) **Ag 99**; Screening Properties of Silicon-Based Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**

**Ruhl, R. L.** Unbalanced Response of a Large Rotor-Pedestal-Foundation System Using an Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**

**Rule Formulation**  
A Distribution-Independent Plotting Rule for Ordered Failures (79-DET-112) (A) **D 106**

**Running**  
The Addicted Joggers (BTR) **Ag 50**

**Rupture Properties**  
Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation (79-PVP-119) (A) **S 103**

**Ruptured Pipelines**  
Pipeline Rupture Detection and Controls (78-Pet-54) (A) **F 125**

**Rush, E. E.** 1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**

**Rusin, T. M.** Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Design (78-WA/RT-5) (A) **My 93**

**Ruskin, R. E.** Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Ji 100**

**Russell, E. C.** Ozone-UV Treatment for City Wastewater Cleanup (79-ENAS-39) (A) **O 90**

**Russell, S. H.** A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) (A) **Mr 90**

**Russow, E. C.** Stresses in Elbows Created by Supporting Lug Load (79-PVP-51) (A) **S 97**

**Rust, J. H. (author)** Nuclear Power Plant Engineering (CB) **N 119**

**Ruston Range**  
A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **Ji 105**

**Ryan, J.** Corrosion Failures: Three Case Histories and Their Solutions (78-WA/Aero-23) (A) **Ap 102**

**Rybicki, E. F.** An Analysis Procedure for Predicting Weld Repair Residual Stresses in Thick Walled Vessels (79-PVP-31) (A) **Ag 105**; An LEFM Analysis for the Effects of Weld Repair Induced Residual Stresses on the Fracture of the HSST IV-B Vessel (79-PVP-30) (A) **Ag 105**

## S

**Sabuncu, M.** Dynamic Analysis of Rotating Asymmetric Cross-Section Blade Packet (79-DET-93) (A) **D 105**; Finite Element Analysis of Rotating Pretwisted Asymmetric Cross-Section Blades (79-DET-95) (A) **D 105**; Vibration Characteristics of Asymmetric Cross-Section Bladed Disk Under Rotation (79-DET-94) (A) **D 105**

**Sadananda, K.** Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) (A) **S 99**

**Sadek, M. M.** The Response of a Hert Machine to Impact Loading Using Finite Elements (79-DET-40) (A) **N 112**; Statistical Analysis of the Influence of Process Variables on Noise Generation in Impact Hot Forming (79-DET-29) (A) **N 111**

**Saler, Z. S.** Behavior of Finite Journal Bearings Under Dynamic Loading Conditions (79-Lub-22) (A) **D 104**

**Sale Machinery Operation**  
An Overspeed Test Program in a Petrochemical Plant (78-DGP-27) (A) **Ja 89**

**Safe Products**  
Products Liability and the Reasonably Safe Product: A Guide for Management, Design, and Marketing (CB) **F 134**

**Safety**  
Highway Hazards (NB) **O 80**

**Safety Analysis**  
Transit System Safety Analysis (IF) **My 59**

**Safety Design Concepts**  
New Design Concepts in Safety of Tractor-Trailers (78-DET-83) (A) **Ja 90**

**Safety Devices**  
Dynamic Analysis of a Roller Coaster (78-DE-W-5) (A) **F 128**

Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**

**Safety Hazards**  
Residual Safety Hazards (78-WA/DE-23) (A) **Mr 87**

**Safety Measures**  
Railroad Safety Buffers (BTR) **S 52**

**Safety Program**  
Simulators to Train Nuclear Plant Personnel (BTR) **O 45**

**Safety Regulations**  
Latest Engineering in Tank Car Design (78-WA/RT-11) (A) **My 93**

**Safety Requirements**  
Brownout for Nuclear Power? (NR) **Je 60**

**Safety Standards**  
Codes, Accolades, Corrections (C) **Ap 45**  
Codes, Standards and Certificate of Authorization Program—Part 1 - Establishing Safety Standards **Ja 33**  
Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**  
Safety Standards in the USSR (C) **S 50**

**Safety Study**  
Panel on Nuclear Safety (ES) **S 21**

**Safety System**  
Nuclear Plant Safety (EN) **Ji 67**

**Safety Valves**  
Selection of Sizing of Velocity Actuated Subsurfaces Safety Valves (78-Pet-8) (A) **Ja 97**

**Sagasti, F. R. (author)** Technology, Planning, and Self-Reliant Development: A Latin American View (CB) **S 112**

**Saibel, E. A. (recipient)** Mayo D. Hersey Award **Ja CR-12**

**Said, M. N. A.** Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**

**Saikudo, R.** Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

**Saintabury, J. A.** A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Ji 99**

**Saito, S.** Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**

**Saito, Y.** An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**

**Sakai, Y.** Construction of Three-Workpiece Lapping Process (78-WA/Prod-7) (A) **Je 90**

**Sakata, S.** Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

**Sakata, T.** Natural Frequencies of Clamped Orthotropic Rectangular Plates With Varying Thickness (78-WA/APM-9) (A) **My 104**

**Salamone, D. J.** Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Ji 99**

**Salaries**  
A Look at Salaries (EN) **Ag 63**  
Salaries Rise Sharply (EN) **Ja 60**

**Salary Report**  
Degrees, Jobs, and Salaries Increased in 1978 (EN) **D 78**

**Salary Survey**  
Engineers' Salaries **My 22**  
How Much Are MBAs Paid? (EN) **Ap 66**

**Salcudean, M.** Heat Transfer in Turbulent Recirculatory Flows Affected by Buoyancy Forces in Rectangular Cavities (79-HT-77) (A) **N 105**; A Three-Dimensional Analysis for the Rewetting Process of Hot Channels (78-WA/HT-27) (A) **Mr 95**

**Saltba, G.** Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**

**Salinity Gradient Energy Converter**  
Untapped Power Where River Meets Sea (BTR) **Ja 49**

**Sallet, D. W.** The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**; An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **Mr 95**; On the Sizing of Pressure Relief Valves for Pressure Vessels which are Used in the Transport of Liquefied Gases (78-WA/HT-39) (A) **Mr 96**

**Salt Cavities**  
Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**

**Salt Hydrates**  
Power Characteristics of a Continuous Crystallization Latent

Heat Recovery System (79-Sol-21) (A) **Ag 94**

**Salt Mines**  
A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**

**Saller, R. T.** In Defense of Si (C) **N 54**

**Sakaja, C. L.** Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100**

**Salvatori, R. (recipient)** George Westinghouse Silver Medal **Ja CR-12**

**Salvesen, K. G.** Source Analysis Modeling for Environmental Assessment (78-WA/APC-10) (A) **My 96**

**Salzano, V. A.** Reciprocating Engine/Compressor Maintenance and Performance Analysis Using an Electronic Analyzer (78-WA/PEM-5) (A) **My 95**

**Salzman, R. N.** Experimental Study of a Solid-Gas Jet Issuing into a Transverse Stream (78-WA/FE-2) (A) **Je 88**

**Samaha, M.** Dynamic Acceptance Test for Machine Tools Based on a Nonlinear Stochastic Model (79-DET-21) (A) **N 110**

**Samaras, T. T. (author)** Industrial Documentation Handbook (CB) **N 118**

**Samaraweera, D. S. A.** Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) **Mr 94**

**Sambor, H.** Computer Simulation and Design of the Control System for a Wind Turbine Generator (79-DE-9) (A) **Ag 102**

**Sampath, P.** A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Ji 99**

**Samuel, E. A.** Electrostatic Precipitator's Performance in Cycling Duty (79-JPGC-Pw-6) (A) **D 98**

**Sandler, S.** Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**

**Sandercock, D. M.** Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ji 98**; An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Je 98**

**Sanders, D. R.** An Incremental Form of the Single-Integral Nonlinear Viscoelastic Theory for Electric-Plastic-Creep Finite Element Analysis (79-PVP-114) (A) **S 103**

**Sandler, H.** In Vivo Constitutive Properties of the Passive Left Ventricular Myocardium (79-Bio-6) (A) **S 109**

**Sander, G. N.** Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**; Mini Baja—Maxi Mistake (C) **F 54**

**Sandquist, G. M.** Graphical Solutions for the Characteristic Roots of the First Order Linear Differential—Difference Equation (78-WA/DSC-31) (A) **Ap 96**

**Sandwich Plates**  
Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**

**Sandwich Structures**  
Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**

**Sanford, C. E.** Bismuth Magnetoresistive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**

**Sangiovanni, J. J.** Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT/Isr-12) (A) **O 83**

**Sankar, S.** On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) (A) **Ag 103**

**Sankar, T. S.** Dynamic Acceptance Test for Machine Tools Based on a Nonlinear Stochastic Model (79-DET-21) (A) **N 110**; Time Domain Analysis of Machinery Vibration Signals Using Digital Techniques (79-DET-13) (A) **N 110**

**Saragosa, I.** A Comparative Assessment of the LMFB and Advanced Converter Fuel Cycles (79-JPGC-NE-3) (A) **D 96**

**Saravananmullu, H. I. M.** A Low-Cost, On-Site Performance Monitoring System (79-GT-21) (A) **Je 99**

**Sargunam, I. L. P.** More on Registration (C) **My 47**

**Satellite Data**  
Unusual Satellite Data—A Black Hole (BTR) **Je 50**



#### Satellite Data Retrieval

Automated Biomonitoring Applications to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Biosensing for Watershed Management (79-ENAS-41) (A) **O 89**

#### Satellite Power Systems

Evaluate Satellite Power Systems (BTR) **O 47**

#### Satellite Research

Solar Power Satellite Research (ES) **Ag 19**

#### Satellite Signals

Satellite Signals to Guide Missiles (BTR) **D 60**

#### Satellites

Earth Terrain Contouring by Satellite (BTR) **Mr 52**

Thermal Design for the Infrared Astronomical Satellite (IRAS) Telescope System (79-ENAS-38) (A) **O 90**

Sato, H. Hydraulic Axial Thrust in Multistage Centrifugal Pumps (78-WA/FE-12) (A) **Je 89**

Satterwhite, L. E. Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Ja 97**

Sattler, T. A. A Simple Method for Monitoring and Measuring Low Level Vibrations (79-DET-41) (A) **N 112**

#### Saturated Liquid Propane

The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**

#### Saturated Rocks

Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**

Sauer, H. J., Jr. Energy Recovery Performance of Exhaust Air Heat Exchangers and Various Types of Environmental Control Systems (78-WA/HT-62) (A) **Ap 92**

Nucleate Boiling Performance of Refrigerants and Refrigerant-Oil Mixtures (79-HT-79) (A) **N 105**

Food System Gallery for Space Shuttle (79-ENAS-47) (A) **O 91**

Savage, M. The Characterization of Cam Drive System Windup (79-DET-24) (A) **N 111**

Sawyer, L. M. A Passive Graphics Program for General Finite Element Analyses (79-PVP-20) (A) **Ag 105**

Sawyer, R. T. Cheers for October (C) **D 54**

Saxton, M. J. Combustion in a Coal-Fired Internal Combustion Engine: A Simple Theory (78-WA/Fu-1) (A) **Je 96**

Sayles, R. S. Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94**

Sayyed, S. Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance (78-Pet-28) (A) **F 122**

Sazawal, V. K. Trial Application of the Draft Structural Design Criteria for Breeder Reactor Core Components to a Typical Blanket Assembly Duct (79-PVP-27) (A) **Ag 105**

#### Scale Models

Scale Model Impact Tests of Hazardous Material Container Designed to Section VIII, Division 1, of the ASME Code (79-PVP-42) (A) **Ag 106**

#### Scanning Electron Microscopy

Scanning Electron Microscopy (BTR) **Mr 46**

#### Scanning Microscopy

Scanning Microscopy in Microcircuit Failure Analysis (78-WA/Aero-22) (A) **Ap 102**

#### Scanning Procedure

Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Ja 93**

Scarion, L. A. Diversifying Our Energy Options (C) **D 54**; Meritocracy: Should We Or Shouldn't We? (C) **Jl 39**

Scavuzzo, R. J. Formulation of Torsional Soil-Foundation Interaction of Building Structures (79-PVP-74) (A) **S 95**

Schaefer, A. O. (recipient) J. Hall Taylor Medal **Ja CR-13**

Schaeffer, M. T. The Application of Component Mode Synthesis to Covered Groups of Blades (79-DET-92) (A) **D 104**

Schaffer, A. Experimental and Analytical Investigation of the Effects of Reynolds Number and Blade Surface Roughness on Multistage Axial Flow Compressors (79-GT-2) (A) **Ag 97**

Scharp, C. B. ASME Performance Test Codes and Their Relationship to Plant Testing and Thermal Performance Analysis **Ap 105**

#### Schedule Performance

PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Je 91**

Scheller, J. D. Numerical Evaluation of an Inelastic Piping Elbow Element (79-PVP-41) (A) **Ag 106**

Schiff, M. I. Design of Air-Cooled Jet Engine Testing Facilities (79-GT/1er-5) (A) **O 82**

Schilling, W. F. Gas Turbine Bucket Corrosion Protection Developments (79-GT-47) (A) **Ag 96**

Schimming, P. Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Je 99**

Schlack, L., Jr. Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) (A) **Mr 84**

Schlein, B. Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Jl 102**

Schlesinger, J. R. Call for Conservation from DOE (C) **Ap 44**

Schmidt, K. Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Ja 87**

Schmidt, P. S. The Role of State Government in Industrial Conservation (78-TS-7) (A) **F 130**

Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**

Schmidt, W. Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System (78-DGP-5) (A) **Ja 88**

Schmueser, D. The Interface Crack in a Combined Tension-Compression and Shear Field (79-APM-23) (A) **S 107**

Schneider, G. R. Ozone-UV Treatment for Oily Wastewater Cleanup (79-ENAS-39) (A) **O 90**

Schneider, H. Utilization of Computer Techniques in Analyzing Production Trend Problems (78-WA/Aero-16) (A) **Ap 101**

Schoepner, R. J. Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) (A) **My 97**

#### Scholarships

Scholarships in Marine Engineering (EN) **Ja 60**

Schreyer, H. L. Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) (A) **S 102**

Schroeder, J. Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**

Schrof, W. E. J. Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Tex-5) (A) **Ja 92**

Schubert, F. H. EDC-A Regenerable CO<sub>2</sub> Removal Subsystem for an Enhanced Capability Orbiter (79-ENAS-34) (A) **O 89**

Schuler, T. The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

Schult, M. Theoretical Investigation of the Dynamic Characteristics of Heat Exchangers with Double Phase Change (79-HT-81) (A) **N 105**

Schultz, C. C. Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation (79-PVP-119) (A) **S 103**

Schulze, F. W. Progress in Railway Mechanical Engineering—1977-1978 Report of Survey Committee—Locomotives (78-WA/RT-16) (A) **My 93**

Survey Committee Report on Railway Engineering Progress—Locomotives **Jl 35**

Schuman, D. J. Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**

Schwarz, C. E. Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**

Schwartz, S. H. Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**

Laser Anemometer Measurements in Turbulent Natural Convection over a Vertical Flat Surface (79-HT-106) (A) **N 108**

Schweitzgabel, K. Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**

Sclammarella, C. A. Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**

#### Science Center

Science Center Recommended for New Jersey (NB) **Ap 85**

#### Science/Engineering Personnel

Employment Increase in University Personnel (EN) **N 80**

#### Scientific Research

Radiation's Health Effects (BTR) **D 62**

#### Scientific Revolution

America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 94**

#### Scientific Terms

McGraw-Hill Dictionary of Scientific and Technical Terms (CB) **Je 103**

#### Scientists

Scientists Must Write: A Guide to Better Writing for Scientists, Engineers and Students (CB) **N 118**

#### Scientist's Handbook

The Practising Scientist's Handbook: A Guide for Physical and Terrestrial Scientists and Engineers (CB) **F 134**

Scott, D. Evaluation of Alternative Steam Sources for Industrial Cogeneration (79-IPC-Pwr-2) (A) **D 101**

#### Screen Printing

The Impact of Screen Printing on the Cost of Solar Cell Metallization (79-Sol-6) (A) **Ag 93**

#### Screening Properties

Screening Properties of Silicon-Based Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**

#### Scroll Machine

The Scroll Machine—An Old Principle With a New Twist **D 46**

Scrutton, R. F. The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**

#### Sculptured Surface Tooling

A Case Study in Technology Transfer (78-DET-81) (A) **Ja 85**

#### Sea Grant

LSU Wins National Sea Grant College Status (EN) **Ap 86**

#### Sea Ice

In-Situ Measurement of the Mechanical Properties of Sea Ice (78-Pet-15) (A) **Ja 98**

#### Seafloor Instabilities

Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**

#### Seal DR Bearing

Preheat Temperature for Vacuum Dewatering of Sealed Bit Bearing Prior to Greasing (78-Pet-38) (A) **F 124**

#### Seal Rings

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) (A) **Ja 94**

Spiral Vibrations Due to the Seal Rings in Turbogenerators Thermally Induced Interaction Between Rotor and Stator (79-DET-61) (A) **N 115**

#### Seal System

Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **Ap 89**

#### Sealing Integrity

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**

#### Sealing Rings

Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**

#### Seals

A Fluid Mechanics Model to Estimate the Leakage of Incompressible Fluids through Labyrinth Seals (79-FE-4) (A) **O 85**

A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) (A) **Mr 87**

Squeeze Effects in Radial Face Seals (79-Lub-10) (A) **D 103**

Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Ja 95**

#### Seamless Tubes

Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**

Seamless, L. O. 1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**

#### Seawater

Endless Fuel from Seawater (BTR) **Mr 52**

#### Seawater Hydraulic Motor

Seawater Hydraulic System (BTR) **N 88**

#### Seawater Study

Uranium from Seawater (ES) **Jl 20**

Seay, J. G. The LNG Industry: An Overview of Projects and Costs (78-Pet-32) (A) **F 122**

Seborg, D. E. Experience with Experimental Applications of Multivariable Computer Control (78-WA/DSC-26) (A) **Ap 96**

#### Secondary Liquid Phase Structure

Investigation of Secondary Liquid Phase Structure in Steam

Wake (78-WA/FE-13) (A) **Je 89**

**Security Device**  
Jimmy-Proof Auto Lock (BTR) **Ji 44**

**Sedimentation**  
Power Characteristics of a Continuous Crystallization Latent Heat Recovery System (79-Sol-21) (A) **Ag 94**

**Segmented Lifelines**  
Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) (A) **My 96**

**Segmented Monolith**  
The Segmented Oxidizing Monolith Catalytic Converter—Theory and Performance (79-HT-55) (A) **N 103**

**Sehgal, R. C.** On the Horizontal Recirculation in Water Bodies Due to Thermal Discharge (79-HT-84) (A) **N 106**

**Sehloglu, H.** A Finite Element and Gradient Method for Identification of Parameters in a Class of Distributed Parameter Systems (78-WA/DSC-29) (A) **Ap 96**

**Seidel, M. C.** Invention Contentions (C) **Je 44**

**Selert, P.** Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Ji 93**

**Selring, A.** The Application of the Ritz Averaging Method to Determining the Response of Systems with Time Varying Stiffness to Harmonic Excitation (79-DET-20) (A) **N 110**, Normal Mode Uncoupling of Systems With Time Varying Stiffness (79-DET-19) (A) **N 110**

**Selring, A. A.** (recipient) Machine Design Award **Ja CR-12**

**Seismic Analysis**  
Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) (A) **My 96**

**Seismic Design**  
Combination of Modal Forces and Stresses in the Seismic Design of Piping Systems (79-PVP-112) (A) **S 102**

**Seismic Environment**  
A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 96**

**Seismic Evaluation**  
Seismic-Evaluation of Piping and Supports at Diablo Canyon Site Units 1 and 2, for the Postulated Hosgri Earthquake (79-PVP-100) (A) **S 102**

**Seismic Protection**  
The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**

**Seismic Response Analysis**  
Probabilistic Seismic Response Analysis of Nuclear Power Plant Structures (79-PVP-73) (A) **S 99**

**Seismic Response Behavior**  
Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**

**Seismic Response Control**  
Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**

**Seismic Restraint Spacing**  
Seismic Restraint Spacing: A Velocity Spectrum Method and Other Considerations (79-PVP-12) (A) **Ag 104**

**Seismic Risk Analysis**  
Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**

**Seismic Survey Ship**  
Seismic Survey Ship (IF) **Je 59**

**Seismic Velocities**  
A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**

**Sekhar, N.** Modification of Electrostatic Precipitator Performance by Use of Fly-Ash Conditioning Agents (78-WA/APC-3) (A) **My 97**

**Selberg, B. P.** Can Nozzle Design be Effectively Improved for Drilling Purposes (78-Pet-51) (A) **F 125**

**Selective Catalytic Reduction**  
Controlling Emissions (ES) **Mr 23**

**Selective Precision Synthesis**  
Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (78-WA/DE-2) (A) **Mr 84**

**Selective Pyrolysis**  
Noncatalytic Conversion of Biomass to Gasoline (79-Sol-29) (A) **Ag 96**

**Self-Excited Gas Oscillations**  
Distinctions Between Two Types of Self Excited Gas Oscillations in Vaned Radial Diffusers (79-GT-58) (A) **Ji 92**

**Self-Excited Vibration**  
Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**

**Self-Navigating Robot**  
Self-Navigating Robot (BTR) **Ag 48**

**Self-Synchronization**  
On a New Type of Vibrating Lift (79-DET-23) (A) **N 111**

**Semiconducting Silicon**  
Cast Semicrystalline Silicon for Solar Cells (79-Sol-16) (A) **Ag 94**

**Semi-Reverberant Environments**  
Sound Power Levels of Large Engines Measured in Semi-Reverberant Environments (78-DGP-20) (A) **Ja 88**

**Semmens, R.** Power Station Experience with Retrofitted Programmable Fuel Management and Sequencing Controllers for Aero-Derivative Gas Turbine (79-GT-191) (A) **Ag 100**

**Semura, J. S.** Bismuth Magnetoresistive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**

**Sengers, J. V.** Dielectric Constant of Water and Steam **S 44**; Viscosity of Nitrogen Near the Critical Point (78-WA/HT-38) (A) **Ap 91**

**Sensor Design**  
Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**

**Sensors**  
Isothermal Heat Flux Sensor (78-WA/HT-14) (A) **Mr 94**

**Separating Flow**  
Prediction of Incompressible Turbulent Separating Flow (78-WA/FE-4) (A) **Je 89**

**Seo, K.** The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilational Eigenstrains (79-APM-29) (A) **S 107**

**Separation-Reattachment Flow**  
Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Je 88**

**Separator Contact Forces**  
Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-34) (A) **Ja 96**

**Serata, S.** Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**

**Sernas, V. S.** Heat Transfer in Air Enclosures of Aspect Ratio Less Than One (78-WA/HT-7) (A) **Mr 93**

**Serotta, D.** Applications of the Electro-Chemical Combustion Oxygen Analyzer (78-IPC-Pwr-3) (A) **Ja 91**

**Serovy, G. K.** Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 88**

**Service Life Increase**  
Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94**

**Service Requirements**  
Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Ji 95**

**Servo Controlled Joints**  
Analysis of Massless Elastic Chains with Servo Controlled Joints (78-WA/DSC-34) (A) **Ap 99**

**Sessions, B.** Evolutionary Possibilities of the Spacelab Thermal Control Systems Towards Space Stations (79-ENAS-11) (A) **O 87**

**Seth, B. B.** Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**

**Sethi, J. S.** Piping Reaction on Active and Non-Active Equipment Nozzles (79-PVP-28) (A) **Ag 105**

**Sethna, P. R.** Bifurcations in Dynamical Systems With Internal Resonance (78-WA/APM-12) (A) **My 104**; Elections to Fellow Grade **D 94**

**Seurat, S. (author)** Technology Transfer—A Realistic Approach (CB) **Je 103**

**Sewage Sludge**  
Irradiated Sludge as Cattle Feed (BTR) **S 55**

**Seward, W. D.** Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material—Sold Helium (78-WA/HT-12) (A) **Mr 94**

**Sex Lure**  
Insect Control via Pathogenic Sex Lure (BTR) **Ji 43**

**Sgourakos, G. E.** Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/FM-3) (A) **Mr 92**

**Shadday, M. A., Jr.** Temperature Probe Calibration in Supersonic Rarefied Flows (78-WA/HT-1) (A) **Mr 93**

**Shaffer, C.** Techniques of Solid Waste Fuel Combustion (79-IPC-Pwr-3) (A) **D 100**

**Shaffer, R. J.** Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**

**Shaft-Disk Systems**  
Design Considerations in the Coupling of Shaft-Disk Systems by Interference Fits (79-DE-6) (A) **Ag 101**

**Shaft Power Gas Turbines**  
A Low-Cost, On-Site Performance Monitoring System (79-GT-21) (A) **Je 99**

**Shaft Support Technology**  
Active Magnetic Bearings (BTR) **F 58**

**Shaft Whirl Stability**  
Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) (A) **Mr 84**

**Shafts**  
Two or More Rotary Outputs From One Input (BTR) **Je 55**

**Shah, N.** Development of Deviation Control Tool (78-Pet-58) (A) **F 125**

**Shah, V. N.** Loads Moving on Beam Supported by Layered Elastic Foundation (79-DET-15) (A) **N 110**

**Shahinian, P.** Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) (A) **S 99**

**Shale**  
Another Go at Oil Shale (ES) **S 21**

**SRI President Sees Hope in Energy Crunch (NR)** **My 66**

**Shale Deposits**  
Needed: New Oil Shale Processes (ES) **S 20**

**Shale Oil**  
New Prospects for Shale Oil (ES) **Ap 20**

**Shale Utilization**  
Oil Shale Utilization Method (IF) **O 52**

**Shallow Open Sea Areas**  
Fabrication and Installation of Production Platforms in Shallow Open Sea Areas: A New Concept (78-Pet-70) (A) **F 127**

**Shan, H. S.** Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) (A) **My 98**

**Shang, H. M.** Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**

**Shanks, H. R.** Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**

**Shape Defects**  
The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/Prod-18) (A) **My 99**

**Shape Memory Alloys**  
Shape Memory Alloys (IF) **S 65**

**Shapiro, A. B.** Optimal Control Concepts for the Characterization and Design of Highway Vehicle-Trailer Systems (78-WA/DSC-27) (A) **Ap 96**

**Shapiro, L. H.** In-Situ Measurement of the Mechanical Properties of Sea Ice (78-Pet-15) (A) **Ja 98**

**Shapiro, N. L.** Resource Utilization and Design Aspects of the Heavy Water Reactor (78-WA/NE-7) (A) **Mr 88**

**Sharifi, P.** A Comparative Assessment of the LMFBR and Advanced Converter Fuel Cycles (79-JPGC-NE-3) (A) **D 96**

**Sharbaugh, J. E.** A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) (A) **Mr 87**; The Value of Prototype Testing in the Development of In-Vessel Handling Machine for FFTF (78-WA/NE-3) (A) **Mr 87**

**Sharif, Y. N.** ... and Grafoons (C) **My 46**

**Sharma, A. V.** Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**

**Sharoni, A.** The Effect of Coning on Radial Forces in Misaligned Radial Face Seals (79-Lub-17) (A) **D 103**

**Sharp, H. R.** Elections to Fellow Grade **S 94**

**Sharp Cones**  
Low Reynolds Number Effects on Sharp Cone Turbulent Heat Transfer Under Hypersonic Wind Tunnel Conditions (79-HT-89) (A) **N 106**

**Sharpe, J. E. E.** The Optimization of Machine Tool Parameters (79-DET-102) (A) **D 105**

**Sharpe, W. N., Jr.** Measurement of the Elastic-Plastic Boundary Around Coldworked Fastener Holes (78-WA/APM-2) (A) **My 103**

**Shaughnessy, J. T.** Chebyshev Matrix Methods for the Heat Equation: Convergence and Accuracy (79-HT-62) (A) **N 104**; Spectral Methods for Transient Heat Conduction Problems in Simple Geometries (79-HT-61) (A) **N 104**

**Shaw, H.** Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Ji 103**

- Shaw, M. C.** Reverse Plastic Flow Associated With Plastic Indentation (78-WA/Prod-19) (A) **My 100**
- Shawki, G. S. A.** Behavior of Finite Journal Bearings Under Dynamic Loading Conditions (79-Lub-22) (A) **D 104**
- Shear Fields**  
The Interface Crack in a Combined Tension-Compression and Shear Field (79-APM-23) (A) **S 107**
- Shear Flow**  
Application of Average Flow Model to Lubrication Between Rough Sliding (78-Lub-17) (A) **Ja 95**  
The Effect of Hub Inlet Boundary Layer Skewing on the Endwall Shear Flow in an Annular Turbine Cascade (79-GT-13) (A) **Je 99**  
A General Solution for Distorted Flow in Cascades of Aerofoils (79-GT-65) (A) **Jl 93**
- Shear Response**  
Toward the Rational Selection of Base Isolation Systems (79-PVP-53) (A) **S 97**
- Shear Strength Measurements**  
Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Ja 94**
- Shear Stress**  
Lubricant Limiting Shear Stress Effect on EHD Film Thickness (79-Lub-12) (A) **D 103**  
A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) (A) **Ja 94**
- Shear Zone**  
The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**
- Shearer, W. D.** Utilization of Coal-Oil and Coal-Oil Water Mixtures in Conventional Fuel Oil Systems (79-IPC-Fu-1) (A) **D 101**
- Sheet Materials**  
An In-Field Method for the Determination of the Normal Plastic Anisotropy (R) Value for Sheet Materials (78-WA/Prod-41) (A) **Je 90**
- Sheet Metal**  
Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/Prod-42) (A) **Je 90**
- Sheet Molding Compound**  
The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) (A) **Mr 90**
- Sheets, H. E.** Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**
- Sheikh, A. K.** Cost Optimization Models for Planned Replacement (79-DET-115) (A) **D 107**; Reliability and Optimal Replacement via Coefficient of Variation (79-DET-106) (A) **D 106**
- Shekleton, J. R.** Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Jl 104**
- Shell Model**  
A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) (A) **My 98**
- Shell-and-Tube Evaporators**  
Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**
- Shell-and-Tube Gas Turbine Recuperators**  
On the Optimal Tube Spacing for Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**
- Shell-and-Tube Heat Exchangers**  
A Numerical Solution Method for the Prediction of Flow and Terminal Distribution in Shell-and-Tube Heat Exchangers (79-HT-63) (A) **N 103**
- Shells**  
Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) (A) **Ag 103**  
Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**  
Creep Buckling of Spherical Shells Using a Comparative Stress Method (79-PVP-3) (A) **Ag 103**  
Design of Radial Nozzles in Cylindrical Shells for Internal Pressure (79-PVP-14) (A) **Ag 104**  
Dynamic Buckling of a Damped Externally Pressurized Imperfect Cylindrical Shell (79-APM-21) (A) **S 107**  
Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**  
External Hydrostatic Pressure Loading of Concrete Cylindrical Shells (79-PVP-125) (A) **S 104**  
Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**  
Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-6) (A) **Ag 104**
- Orthotropic Cylindrical Shells Under Dynamic Loading** (78-WA/DE-21) (A) **Mr 98**
- Plastic Buckling of Cylindrical Shells under Axial Compression** (79-PVP-99) (A) **S 101**
- Small-Scale Yielding at the Tip of a Through-Crack in a Shell** (79-PVP-89) (A) **S 100**
- Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes** (78-WA/PM-18) (A) **My 104**
- Wide-Band Random Axisymmetric Vibration of Cylindrical Shells** (79-APM-13) (A) **S 106**
- Shen, C. P.** Bursting Experiment of a High Pressure Multiwall Test Vessel (79-PVP-96) (A) **S 101**
- Shen, P. I.** Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**
- Sheridan, P. J.** Engineers' Salaries **My 22**
- Shen, P. I.** Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**
- Sheridan, P. J.** Engineers' Salaries **My 22**
- Sherwin, E. T.** A Review of Solid Waste Resource Recovery Technology: Appraisal of Operations and Economics with Assessment and Economics with Assessment of Newly-Developed Processing (79-ENAS-40) (A) **O 90**
- Shieh, R. C.** Elastic and Viscoplastic Impact Bending Response Analysis of Nuclear Shipping Cask Structures (79-PVP-43) (A) **Ag 107**
- Shiembob, L. T.** Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) (A) **Ap 89**
- Shiftable Conveyor Systems**  
Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MT-7) (A) **My 98**
- Shilling, R. B., III** The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**
- Shinoda, H.** Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**
- Shinozuka, M.** Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**
- Ship Propulsion**  
Fluidized Bed Combustion... A New Era in Ship Propulsion **Ja 30**
- Shipboard Waste Treatment**  
Development of Oil Content Monitors for Navy Ships (79-ENAS-42) (A) **O 90**
- Shipping Casks**  
Elastic and Viscoplastic Impact Bending Response Analysis of Nuclear Shipping Cask Structures (79-PVP-43) (A) **Ag 107**
- Shipyards Projects**  
Floating Hotels (IF) **F 64**
- Shiraki, K.** Response Analysis of a General Asymmetric Rotor-Bearing System (79-DET-84) (A) **N 117**
- Shiratori, T.** Dynamically Optimum Design of Rope-Pulley Spacing Mechanism (79-DET-34) (A) **N 112**
- Shitzer, A.** Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monoactive Electrocoagulation (78-WA/HT-66) (A) **Ap 93**
- Shu, K. C.** Predicting Temperatures in Flowing Oil Wells (78-Pet-9) (A) **Ja 97**
- Shladover, S. E.** Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) (A) **Ap 94**
- Shock-Wave Generators**  
Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Jl 91**
- Shock Waves**  
Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Jl 98**  
Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) (A) **S 108**
- Shoemaker, A. K.** Relationships Between Mechanical Properties and the Extension and Arrest of Unstable Cracks in Line Pipe Steels (79-PVP-76) (A) **S 99**
- Shoji, K.** The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**
- Shop Testing Compressors**  
Aerodynamic Shop Testing Multistage Centrifugal Compressors and Predicting Gas Performance (78-Pet-28) (A) **F 122**
- Short Bearing Theory**  
A Generalized Short Bearing Theory (79-Lub-20) (A) **D 103**
- A Finite Length Bearing Correction Factor for Short Bearing Theory** (79-Lub-13) (A) **D 103**
- Short Duration Techniques**  
On the Film Cooling Effectiveness Controversy (79-GT-27) (A) **Jl 90**
- Shoulberg, R. H.** Invention Contentions (C) **Je 44**
- Shoup, T. E. (author)** A Practical Guide to Computer Methods for Engineers (CB) **S 111**
- Shu, H. T.** Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Jl 91**
- Shu, Ho-Tien** Conceptual Design of an 80,000-shp Fossil-Fired Closed-Cycle Helium Turbine Propulsion System for Naval Ship Applications (79-GT-94) (A) **Ag 99**; Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**
- Shuttle Era**  
Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAS-45) (A) **O 90**
- Shuttle Missions**  
Modular Heat Pipe Radiators for Enhanced Shuttle Mission Capabilities (79-ENAS-17) (A) **O 88**
- Shuttle Orbiter**  
Shuttle Orbiter Flash Evaporator (79-ENAS-14) (A) **O 87**
- Shuttle Orbiter Design**  
Design, Analysis, and Tests of a Shuttle-Type Heat-Pipe-Cooled Leading Edge (79-ENAS-20) (A) **O 88**
- Shuttle Payloads**  
Radiator Heat Rejection Options for Shuttle Payloads (79-ENAS-18) (A) **O 87**
- Shuttle Reentry**  
Exotic Tiles Solve Shuttle Reentry Problem (BTR) **My 48**
- Shuttle Units**  
Evolution of the Shuttle Extravehicular Mobility Unit (79-ENAS-24) (A) **O 88**
- SI System**  
SI Simplifies Life (C) **Ag 42**
- SI Units**  
In Defense of SI (C) **N 54**  
... and Grafoons (C) **My 46**  
Metric Guide to Mechanical Design and Drafting (CB) **O 96**  
Metric Second? Just a Second! (C) **N 55**  
Metric Units in Engineering (CB) **Mr 98**  
Metrication: Should We Or Shouldn't We? (C) **Jl 39**  
SI - The Weight/Mass Controversy **Mr 42**  
Stress Analysis (C) **O 42**  
Units for Engineering (C) **Je 45**  
Units for the Public (C) **N 54**  
Of Weight, Mass... (C) **My 46**
- Siang, H. H.** Effect of Thickness on Moisture Migration in Light-Weight Concrete Slabs (79-HT-2) (A) **O 82**
- Siddall, J. N.** Interaction Curves as a Tool in Optimization and Decision Making (79-DET-3) (A) **N 109**; Large System Optimization Using Decomposition with Soft Specifications (79-DET-99) (A) **D 105**; Use of a Probabilistic Design of the Maximum Entropy Distribution Based on Ranked Data (79-DET-51) (A) **N 114**
- Sidi, M. Ali Ba** Functional Characterization of Canine Anterior Cruciate Ligaments (79-Bio-1) (A) **S 108**
- Siegel, W. H.** Experimental Investigation of the Buckling Characteristics of a Beaded Skin Panel for a Hypersonic Aircraft-Including Comparisons with Finite Element and Classical Analysis (78-WA/Aero-3) (A) **Ap 100**
- Sieghried, R. G.** Thermal Stress Evaluation of Industrial Brake Drums Using Finite Element and Finite Difference Techniques (79-DE-20) (A) **Ag 103**
- Sieverding, C. H.** The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Jl 98**
- Signature Analysis**  
Signature Analysis for Mechanical Systems via Dynamic Data System (DDS) Monitoring Technique (79-DET-10) (A) **N 110**
- Silencer Extension**  
Low Frequency Gas Turbine Noise (79-GT-196) (A) **Jl 104**
- Silicon-Base Ceramics**  
Screening Properties of Silicon-Base Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**
- Silicon Carbide**  
Spectral Emissivity of Ceramics at High Temperatures: Silicon Carbide and Silicon Nitride (79-HT-24) (A) **O 93**
- Silicon Nitride**  
Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Jl 95**  
Spectral Emissivity of Ceramics at High Temperatures:



- Silicon Carbide and Silicon Nitride (79-HT-24) (A) **O 93**
- Silicon-Nitride Recuperator**  
First Experimental Results on a Silicon-Nitride Recuperator with Six Heat Exchanger Elements (79-GT-70) (A) **Ji 54**
- Silicon Solar Cells**  
The Impact of Screen Printing on the Cost of Solar Cell Metallization (79-Sol-6) (A) **Ag 93**
- Silicon Solar Cells (IF) **S 65**
- Silva, T. M. Die Temperatures During Production Drop Forging (78-WA/Prod-28) (A) **My 100**
- Silverstein, R. Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Je 97**
- Similitude Law**  
Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**
- Simmer, G. A. Response Characteristics of Optical Probes (78-WA/HT-3) (A) **Mr 92**
- Simmonds, R. C. Position Paper Found Wanting (C) **N 56**
- Simmons, G. W. Fatigue Crack Growth in 2 1/2Cr-1Mo Steel exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**
- Simmons, R. T. PMS—An Effective Management System for Power Plant Engineering Design (78-WA/Mgt-6) (A) **Je 91**
- Simon, F. F. A Mobile Apparatus for Solar Collector Testing (79-DE-5) (A) **Ag 101**; Special Effects on Direct-Irradiation Absorbance of Five Collector Coatings (79-HT-18) (A) **O 93**
- Simoneau, R. J. Some Flow Phenomena in a Constant Area Duct with a Borda Type Inlet Including the Critical Region (78-WA/HT-37) (A) **Mr 96**
- Simonich, J. C. An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**
- Simpson, T. J. Contact Conductance Between Parallel Tubes (79-HT-85) (A) **N 106**
- Sims, C. T. Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**
- Simulated Emissions**  
Tests of Various Coals, Coal-Oil Mixtures and Refuse Derived Fuels in an Experimental Test Facility (78-WA/APC-12) (A) **My 96**
- Simulated Engine Conditions**  
An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**
- Simulated Geothermal Conditions**  
Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**
- Simulated Mission**  
Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**
- Simulation**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) (A) **Ap 93**
- Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**
- The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**
- Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**
- Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**
- The Direct-Search Method in CNC Interpolators (78-WA/Prod-40) (A) **My 102**
- Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**
- Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Je 94**
- Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**
- Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**
- The Performance of Automotive Hand Controls (78-WA/DSC-38) (A) **Ap 99**
- Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**
- Simulation of the Influence of Bonding Materials on the Dynamic Behavior of Laminated Composites (78-WA/APM-15) (A) **My 104**
- Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**
- Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Je 96**
- Study of Integrated Gasification Combined Cycle Plant Interaction and Control (79-GT-60) (A) **Ji 92**
- A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**
- A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**
- Using Simulation to Solve Problems (CB) **O 97**
- Simulation Facility**  
Gas Stream Composition and Temperature Determination in a Coal-Fired MHD Simulation Facility (78-WA/HT-23) (A) **Mr 94**
- Simulation Methods**  
Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**
- Simulation Models**  
Evaluation of Internal Combustion Engine Valve Trains by an Empirically Tuned Simulation Model (78-DGP-9) (A) **Je 87**
- Simulation of a Turbocharged Diesel Engine to Predict the Transient Response (78-DGP-11) (A) **Je 87**
- The Train Operations Simulator (TOS)—A Tool for Railroad Accident Investigation (78-WA/RT-3) (A) **My 92**
- Simulators**  
Simulators to Train Nuclear Plant Personnel (BTR) **O 45**
- Sinclair, A. R. A New Proppant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**
- Sinden, F. W. Altitude Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**
- Singh, P. P. Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liques (79-GT-137) (A) **Ji 99**
- Singer, R. M. Experimental Study of the Transition from Forced to Natural Circulation in EBR-II at Low Power and Flow (79-HT-10) (A) **O 92**
- Singh, K. P. An Approximate Analysis of Foundation Stresses in Horizontal Pressure Vessels (79-NE-1) (A) **S 104**; Optimization of Two Stage Evaporators for Minimizing Rad-Waste Entrainment (79-DET-26) (A) **N 111**
- Singh, S. Static and Dynamic Analysis of Space Frameworks with Curved Members (79-PVP-97) (A) **S 101**
- Single Atmosphere Welding System**  
Computer-Controlled Underwater Welding (BTR) **Mr 49**
- Sinha, D. N. Bismuth Magnetostrictive Thermometry for Transient Temperature Measurements in Liquid Helium (78-WA/HT-4) (A) **Mr 92**
- Sinha, P. K. Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**
- Sinha, S. C. Approximate Eigenvalues for Systems with Variable Parameters (78-WA/APM-29) (A) **Je 93**
- Siock, S. Astronomical Observatory Dome Bearing Design (78-WA/DE-19) (A) **Mr 86**
- Sizing Agent**  
New Sizing Agent Can Reduce Pollutants (EN) **Ji 68**
- Skeels, H. B. Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**
- Skinkis, M. E. An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) (A) **Je 93**
- Skytab Reentry**  
Skytab—Will It or Won't It? (BTR) **My 51**
- Skaggs, S. R. Treatment of Molybdenite Ore Using a 2-kW Solar Furnace (79-Sol-22) (A) **Ag 94**
- Skipor, E. Application of Impact Damping to Rotary Printing Equipment (79-DET-82) (A) **N 116**
- Skateboards**  
Lateral Dynamics and Stability of the Skateboard (79-APM-14) (A) **S 106**
- Sky Radiance**  
A Model for the Angular Distribution of Sky Radiance (79-HT-11) (A) **O 92**
- Slabs**  
An Analysis of the Thermoelastic Problem in a Slab (79-HT-59) (A) **N 103**
- An Iterative Solution for Anisotropic Radiative Transfer in a Slab (79-HT-23) (A) **O 94**
- Slag Droplets**  
The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**
- Slag Transport Models**  
Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**
- Slagging**  
Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**
- Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) (A) **Je 91**
- The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential Coal Ash (78-WA/CD-3) (A) **Je 91**
- Slagging Gasifier**  
Hands Across the Seal (ES) **Mr 22**
- Slanted Hot Wire**  
Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ji 98**
- Slaughter, W. W. Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**
- Sliding Surfaces**  
Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) (A) **Je 95**
- Slip Rings**  
Telemetry for Turbomachinery **Mr 30**
- Sloan, J. G. Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**
- Slot Forge Furnaces**  
Demonstration of Fuel Conservation in High Temperature Industrial Furnaces (78-WA/Ener-8) (A) **Je 92**
- Slovinsky, J. A. Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ji 98**
- Slots**  
Double-Diffusive Convection in an Infinitely Tall Slot (78-WA/HT-8) (A) **Mr 93**
- Slug Rolling**  
The Lancaster Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) (A) **Mr 84**
- Slurry Method**  
Sulfur Esters (BTR) **S 57**
- Slurry Pipelines**  
Coal Slurry Pipelines for the Next Decade **D 38**
- Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines (78-WA/MH-1) (A) **My 97**
- Improved Coal-Slurry Pipeline (BTR) **O 46**
- Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**
- Smalley, A. J. Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-88) (A) **N 117**; The Effects of Strain and Temperature on the Dynamic Properties of Elastomers (79-DET-57) (A) **N 115**; Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Ji 100**; An Introduction to a Unified Approach to Flexible Rotor Balancing (79-GT-161) (A) **Ji 101**; Spine Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**
- Smith, A. D. Singular Confusion (C) **Ji 39**
- Smith, C. C. Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**
- Smith, C. O. ASME Case Problem—Design Defect in a Leaf Spring (78-WA/DE-18) (A) **Mr 86**; Design of Ellipsoidal and Toroidal Pressure Vessels to Probabilistic Criteria (79-DET-110) (A) **D 106**
- Smith, D. P. Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**; Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Ji 93**
- Smith, F. W. Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) (A) **Mr 90**
- Smith, G. D. Noncatalytic Conversion of Biomass to Gasoline (79-Sol-29) (A) **Ag 96**
- Smith, G. J. Geothermal Power and Water Production Studies at the University of California (78-WA/Ener-7) (A) **Je 93**



**Smith, J. L.** Depressurization of Internally Heated Boiling Pools (79-HT-101) (A) **N 107**

**Smith, K. R.** Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**

**Smith, M. C.** The Future of Hot Dry Rock Geothermal Energy Systems (79-PVP-35) (A) **S 96**

**Smith, R. C.** Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MT-7) (A) **My 98**

**Smith, R. E.** Scanning Electron Microscopy **Mr 48**

**Smith, R. H.** An Analytical Solution for Thermal Behavior of the Step Thrust Bearing (79-Lub-19) (A) **D 104**

Heat Exchanger Performance in Latent Heat Thermal Energy Storage (79-HT-17) (A) **O 92**

**Smith, S. E.** Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material—Solid Helium (78-WA/HT-12) (A) **Mr 94**

**Smith, S. U.** Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**

**Smoak, R. H.** Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Jl 94**

**Smoke Emissions**

Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Jl 99**

**Smyth, K. A.** Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Ja 96**

**Snider, F. E.** A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 98**

**Sneddon, I. H.** (editor) Encyclopaedic Dictionary of Mathematics for Engineers and Applied Scientists (CB) **Ap 104**

**Snoek, J.** The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Jl 98**

**Snow, A.** Environmental Effects and the ASME Code (79-PVP-11) (A) **Ag 103**

**Snowden, M.** (author) Management of Engineering Projects (CB) **F 134**

**Snowmobiles**

ASME Case Problem—Design Defect in a Leaf Spring (78-WA/DE-18) (A) **Mr 86**

**Snubber Performance**

Influence of Locking Velocity and Bleed Rate on Hydraulic Snubber Performance (79-PVP-39) (A) **Ag 106**

**So, R. M. C.** The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 89**

**Sobel, L. H.** Plastic Buckling of Cylindrical Shells under Axial Compression (79-PVP-99) (A) **S 101**

**Social Consequences**

OTA Sets Priorities (NR) **Ap 62**

**Society of Women Engineers**

1979 National Convention, review (NR) **S 69**

**Socio-Technical View**

ASME Public Affairs Program at the State Level **My 73**

Going Metric **Ja 86**

It's No Wonder People Distrust Technology **N 86**

The Need for Humanism in Engineering **Mr 69**

OSHA—New Directions **F 78**

Perspective on Nuclear Risks **Je 74**

Space: The Return of the Last Frontier **S 78**

Target: Ends as Well as Means **Ap 74**

Technology—We Can Do Better **Jl 71**

**Sockol, P. M.** Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 88**

**Socolow, R. H.** (author) Saving Energy in the Home: Princeton's Experiments at Twin Rivers (CB) **Mr 98**

**Sodium Azide**

Air Bag—A Health Threat? (BTR) **Ja 41**

**Sodium Coolant**

Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**

**Sodium Pumps**

High Temperature Testing of a Sodium Pump (78-WA/NE-12) (A) **Mr 89**

Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**

**Software Development**

Some Technical and Legal Considerations in Software Development (79-PVP-91) (A) **S 100**

**Software Engineering**

Principles of Software Engineering and Design (CB) **N 119**

**Software Reliability**

Models for Software Reliability (78-WA/Aero-18) **Ap 101**

**Sohue, Y.** Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Jl 98**

**Soil**

Dynamics of Frame Foundations Interacting With Soil (79-DET-53) (A) **N 114**

**Soil Forces**

Design of Pipelines to Resist Seafloor Instabilities and Hydrodynamic Forces (78-Pet-37) (A) **F 123**

**Soil Models**

Unbalanced Response of a Large Rotor-Pedestal-Foundation System Using an Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**

**Solanki, S. C.** Flow Through Non-Circular Annual Passages (79-FE-12) (A) **O 85**

**Solar, J. C.** Application of All-Ceramic Nozzle to Radial Flow Turbine (79-GT-96) (A) **Ag 98**

**Solar Assisted Heat Pumps**

Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Je 94**

Performance of Solar Assisted Heat Pump Heating Systems for Residential Use (79-HT-12) (A) **N 102**

**Solar Cells**

Cascading Solar Cells May Increase Efficiencies (BTR) **Ap 47**

Low-Cost Solar Cells (ES) **Jl 20**

Needed: Bright Ideas! (ES) **My 21**

Silicon Solar Cells (IF) **S 85**

Solar Cell that Works in Dark (BTR) **Ja 42**

Solar Cells (EN) **D 78**

**Solar Central Receiver**

100-MW Solar-Powered Station (BTR) **Mr 50**

**Solar Collector Storage Panel**

Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**

**Solar Collectors**

Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Je 94**

New Solar Collector (IF) **Ja 54**

On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**

Test Facility for Solar Collectors (ES) **Ja 19**

A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**

**Solar Converter**

High-Temperature Solar Converter (BTR) **Ja 44**

**Solar Cooling System**

Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**

Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Je 96**

**Solar Electric Generator**

Solar Electric Generator (IF) **Je 58**

**Solar Electric Homes**

The Solar-Electric Heating and Cooling Experiment **Ja 25**

**Solar Electric Power**

Application of the Centaur Industrial Gas Turbine to the Central Receiver Concept for Solar Electric Power (79-GT-45) (A) **Jl 91**

World's Largest Solar Electric Power Station (BTR) **D 61**

**Solar Energy**

On Air Conditioning With Photovoltaics (79-Sol-26) (A) **Ag 95**

Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Jl 95**

Application of Solar Energy to Continuous Belt Dehydration (79-Sol-27) (A) **Ag 95**

Cast Semicrystalline Silicon for Solar Cells (79-Sol-16) (A) **Ag 94**

Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**

Design Considerations of Small Solar Collector Systems Using Plane Heliostats (79-Sol-2) (A) **Ag 92**

Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**

Design of a 150-KW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Je 95**

Do Photovoltaics Have a Future? (79-Sol-7) (A) **Ag 93**

Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Je 94**

Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**

Energy Panel Calls for Consistent Government Energy Policies (NR) **My 84**

Evaluate Satellite Power Systems (BTR) **O 47**

Expand Sun-Powered Irrigation (BTR) **Jl 45**

Experimental Cultivation of Giant Kelp in Oceanic Environments (79-Sol-30) (A) **Ag 95**

Field Tests of Photovoltaic Power Systems (79-Sol-10) (A) **Ag 93**

A Full-Size Solar System (ES) **N 33**

A Flywheel Energy Storage and Conversion System for Solar Photovoltaic Applications (79-Sol-1) (A) **Ag 92**

Hawaiian Sugarcane Energy Plantations (79-Sol-31) (A) **Ag 96**

The Impact of Screen Printing on the Cost of Solar Cell Metallization (79-Sol-6) (A) **Ag 93**

Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Jl 97**

Initial Investigation of a Shallow-Layer Algal Production System (79-Sol-34) (A) **Ag 96**

Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Je 94**

Low-Cost Thin-Film CdS-Based Solar Cells—Progress and Promise (79-Sol-5) (A) **Ag 92**; (79-Sol-15) (A) **Ag 94**

Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Ja 89**

Matching Solar Systems to Industrial Needs (79-Sol-28) (A) **Ag 95**

Mississippi County Community College Solar Photovoltaic Total Energy Project (79-Sol-13) (A) **Ag 94**

A Mobile Apparatus for Solar Collector Testing (79-DE-5) (A) **Ag 101**

Noncatalytic Conversion of Biomass to Gasoline (79-Sol-29) (A) **Ag 96**

Novel Ceramic Receiver for Solar Brayton Systems (79-Sol-25) (A) **Ag 95**

Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Je 94**

1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**

On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**

Ottawa Townhouses Heated by Solar Energy (BTR) **N 84**

An Overview of Photovoltaic Power Systems (79-Sol-12) (A) **Ag 93**

Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**

Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Je 96**

Photovoltaic Concentrator System Technology and Applications Experiments (79-Sol-9) (A) **Ag 93**

Photovoltaic Electric Power Generation from a Utility Perspective (79-Sol-18) (A) **Ag 94**

Playing with Mother Nature (ES) **N 33**

Power Characteristics of a Continuous Crystallization Latent Heat Recovery System (79-Sol-21) (A) **Ag 94**

The Production of Food, Energy and Fresh Water from the Sea through Artificial Upwelling (79-Sol-19) (A) **Ag 94**

Production of Photovoltaic Devices (79-Sol-8) (A) **Ag 93**

Prospects for Farming the Open Ocean (79-Sol-32) (A) **Ag 95**

Review of Liquid Piston Pumps and Their Operation with Solar Energy (79-Sol-4) (A) **Ag 92**

Search for a PBH via a CRIT—Or How to Crum Mi. Everest into an Atomic Nucleus (BTR) **N 70**

Shopping for Energy Alternatives (NR) **O 59**

The Solar Alternative and the National Energy Plan **N 42**

Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**

Solar-Energy Bibliography (BTR) **Ap 57**

Solar Energy Concentrators (ES) **F 24**

Solar Energy Conversion: The Solar Cell (CB) **S 111**

Solar Energy Forecasts (NB) **Jl 84**

Solar Houses (IF) **N 75**

Solar Photovoltaic Power for Residential Use (79-Sol-11) (A) **Ag 93**

The Solar Potential for Process Heat: A Commercialization Perspective (79-Sol-24) (A) **Ag 95**

Solar Rankine Engines—Examples and Projected Costs (79-Sol-3) (A) **Ag 92**

Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Je 95**

Stochastic Predictions of Solar Cooling System Performance (78-WA/Sol-16) (A) **Je 96**

The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical

Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

Structural Cost Optimization of Photovoltaic Central Power Station Modules and Support Structure (79-Sol-17) (A) **Ag 94**

Summer Cooling with Winter Ice (BTR) **D 55**

Technology Transfer for Solar Energy **Mr 73**

Textile Drying Using Solar Process Steam (79-Sol-23) (A) **Ag 95**

A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 95**

A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**

Thermionic Power Converters for Solar Energy (78-DET-74) (A) **Ja 89**

Treatment of Molybdenite Ore Using a 2-kW Solar Furnace (79-Sol-22) (A) **Ag 94**

Unique Aspects of Retained Photovoltaic System Design (79-Sol-14) (A) **Ag 94**

**Solar Energy Conversion**

Thermoelectric Generators for Solar Energy Conversions (78-Pet-75) (A) **F 127**

**Solar Energy Engineering**

ASME Readies Solar Engineering Journal **Je 81**

Ten Designers Cited for Energy-Efficient Buildings (NR) **F 86**

**Solar Energy Research**

Solar Energy Research Proposals Wanted by DOE (EN) **D 76**

**Solar Energy Storage**

System May Speed Growth of Solar Energy Storage (BTR) **Je 55**

**Solar Energy Technology**

The National Energy Plan and Solar Energy Technology (78-TS-2) (A) **F 129**

**Solar Facility**

Ten-Megawatt Solar Facility (ES) **F 25**

**Solar/Fossil Hybrid Power Systems**

Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Ji 91**

**Solar Gas Turbine Plant**

A Simple Solar Gas Turbine Plant (79-GT-90) (A) **Ji 95**

**Solar Heating**

Solar Factors (C) **Ap 43**

Students Design Do-It-Yourself Solar Heating Systems (EN) **Mr 64**

**Solar Heating Systems**

Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**

An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 96**

**Solar House**

Award-Winning Passive Solar House (BTR) **Je 47**

Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Je 96**

**Solar Incentive**

Solar Incentive from National Energy Act (BTR) **Ap 55**

**Solar Index**

Solar Energy Index (NB) **S 71**

**Solar Installations**

Home Sweet Solar Home! (ES) **My 21**

**Solar Lighting**

Energy-Saving Optics (BTR) **Mr 48**

**Solar Panel**

A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**

**Solar Ponds**

The Shallow Solar Pond: An Alternative Process Hot Water Generator (79-Tex-8) (A) **D 100**

Solar Ponds (IF) **S 65**

**Solar Power**

Accelerating the Commercialization on New Technologies (78-WA/TS-4) (A) **Je 94**

Assessing Microwave Power (C) **D 52**

Big Questions for Solar Power (ES) **Ja 19**

The Impact of Solar Power (ES) **My 21**

Solar Power Satellite Research (ES) **Ag 19**

Solar-Powered Home Air Conditioning (BTR) **Ji 49**

**Solar Power Generation**

Parametric Analysis of Power Conversion Systems for Central Receiver Solar Power Generation (78-WA/Sol-2) (A) **Je 94**

**Solar Powered System**

Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**

**Solar Powered Flight**

Project Sunrise (78-WA/Aero-15) (A) **Ap 101**

**Solar-Powered Irrigation Facility**

Design of a 150-kW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Je 95**

**Solar-Powered Pump**

Solar-Powered Pump (BTR) **O 43**

**Solar Production**

Solar Production of Hydrogen Fuel (BTR) **Ja 45**

**Solar Project**

A National Park Story (ES) **Ji 21**

**Solar Receiver Performance**

Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Je 95**

**Solar Systems**

Commercial Solar System (BTR) **Mr 53**

Gas Turbines, Solar Systems—Opportunities for Clean Energy **My 76**

Proposed Incentives Hinder Solar System Sales (NR) **S 70**

Unusual Satellite Data—A Black Hole? (BTR) **Je 50**

**Solar Thermal Test Facility**

1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**

**Solar Village**

A Milestone Solar Village (ES) **F 25**

**Solar Water Heater**

Portable Solar Water Heater (BTR) **D 57**

**Solid Desiccant Drying**

Rotary Bed Solid Desiccant Drying: An Analytical and Experimental Investigation (79-HT-19) (A) **O 93**

**Solid-Gas Jet**

Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**

**Solid Waste**

Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Je 97**

**Soltvelt, R. E.** A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**

**Somers, J. H.** Synopsis of Environmental Protection Agency Diesel Exhaust Characterization Project (78-DGP-29) (A) **Ja 89**

**Somers, W. E.** Elections to Fellow Grade **S 95**

**Somerton, C. W.** The Effect of Applied Temperature Gradients on the Convective Instability of a Volumetrically Heated Porous Bed (79-HT-30) (A) **O 94**

**Someya, T.** Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**

**Soni, A. H.** Technology Transfer in Biokinematics of Human Spine (78-DET-88) (A) **Ja 90**

**Sonic Wave Mode Conversion**

Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 98**

**Sonneveld, J. J.** A New Method for Etching Surfaces of Bearings and Other Machine Elements (79-Lub-9) (A) **D 103**

**Sood, V. M.** Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ji 104**

**Soot Analysis**

Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Ji 101**

**Soot Loading**

Soot and the Combined Cycle Boiler (79-GT-67) (A) **Ji 93**

**Soot Production**

Alternate Fuels on the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**

Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 105**

**Sossamon, J. L.** Those Treacherous Continuous Pilots (78-Pet-45) (A) **F 124**

**Sound Levels**

Noise Level Considerations Associated with Power Plant Condenser Steam Dump (79-PVP-9) (A) **Ag 104**

**Sound Power Levels**

Sound Power Levels of Large Engines Measured in Semi-Reverberant Environments (78-DGP-20) (A) **Ja 88**

**Sound Propagation**

Mathematical Modeling of Textile Weave Room Sound Propagation (78-Tex-3) (A) **Ja 92**

**Source Analysis Modeling**

Source Analysis Modeling for Environmental Assessment

(78-WA/APC-10) **My 96**

**Space**

Space Behaves as Einstein Expected (BTR) **S 58**

Space: The Return of the Last Frontier **S 78**

**Space Age**

Teleconferencing Brings Diplomacy into the Space Age (NR) **Ja 57**

**Space Concept**

Space Ain't Misbehavin' (C) **D 53**

**Space Construction**

"Hard Hat" EVA, Personal Equipment to Support Large Scale Construction in Space (79-ENAS-43) (A) **O 90**

**Space Frameworks**

Static and Dynamic Analysis of Space Frameworks with Curved Members (79-PVP-97) (A) **S 101**

**Space Habitats**

Controlled-Environmental Agricultural Systems as Food Sources for Large Space Habitats (79-ENAS-30) (A) **O 89**

Food Technology in Space Habitats (79-ENAS-31) (A) **O 89**

Use of Phytotrons in Assessing Environmental Requirements for Plants in Space Habitats (79-ENAS-28) (A) **O 89**

**Space Heat Rejection Systems**

Optimization of Large Heat Pipe Radiators for Long Life Space Heat Rejection Systems (79-ENAS-25) (A) **O 88**

**Space Heating**

Snake River Exploration (ES) **My 21**

**Space Linkages**

Critical Operating Speeds of Constrained Space Linkages Using Spatial Finite Line Element Method and Lumped Mass Systems (79-DET-37) (A) **N 112**

**Space Measurements**

Automated Inspection of Wire-Frame Assemblies (BTR) **Ji 43**

**Space Missions**

Development of the Electrochemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAS-33) (A) **O 89**

**Space Robot**

Snake Robot (BTR) **Ja 41**

**Space Shuttle**

"Blind" Position Indicator (BTR) **Ji 49**

Complete Space Shuttle Assembly (BTR) **Ja 47**

Exotic Tiles Solve Shuttle Reentry Problem (BTR) **My 48**

Workhorse of Space (BTR) **F 56**

**Space Shuttle Program**

"We're Looking for People Who Like to Fly" (NB) **O 60**

**Space Shuttles**

Development of a Space Shuttle Plant Growth Unit (79-ENAS-19) (A) **O 88**

The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**

Food System Galley for Space Shuttle (79-ENAS-47) (A) **O 91**

Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**

Shuttle Engine Undergoes Successful Test (BTR) **N 63**

A Torquewhirl Analysis of the Space Shuttle Main Engine High Pressure Turbopumps (79-DET-76) (A) **N 116**

**Space Telescope**

Servicing the Space Telescope (BTR) **N 57**

**Spacecraft**

Spacecraft Finds Evidence of a "Closed" Universe (BTR) **My 51**

Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**

**Spacecraft Tracking Station**

The Management of Energy Utilization in a Spacecraft Tracking Station and its Industrial Applications (78-WA/PEM-2) (A) **My 94**

**Spacelabs**

Design and Development of a Trace Contaminant Removal Canister for Spacelab (79-ENAS-16) (A) **O 87**

Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAS-45) (A) **O 90**

Evolutionary Possibilities of the Spacelab Thermal Control Systems Towards Space Stations (79-ENAS-11) (A) **O 87**

**Spacing**

The Effect of Spacing on the Turbulent Burning of Vertical Parallel Walls (79-HT-26) (A) **O 93**

## Spacing Mechanisms

Dynamically Optimum Design of Rope-Pulley Spacing Mechanism (79-DET-34) (A) **N 112**

**Spanio, P. T. D.** Harmonic Analysis of Dynamic Systems with Non-Symmetric Nonlinearities (78-WA/DSC-10) (A) **Ap 94**

## Spark-Ignition Engines

Heat Transfer Characteristics of a Spark-Ignition Engine (79-HT-76) (A) **N 105**

## Spark Timing Control

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) (A) **Ap 95**

**Sparrow, E. M. (author)** Radiation Heat Transfer (CB) **Ja 100**

**Speck, D. R.** Four Square Gear Box Testing (79-DET-48) (A) **N 114**

**Spector, R. B.** Reliability Prediction Techniques for Second Generation Marine and Industrial Gas Turbines (79-GT/Int-3) (A) **O 82**; The "Second Generation" LM2500—An Example of High Level of Reliability/Availability with Low Life-Cycle Costs (79-GT-79) (A) **Ap 98**

## Spectral Analysis

Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**

Identification of Bearing Defects by Spectral Analysis (79-DET-14) (A) **N 110**

## Spectral Density Nature

Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Ja 88**

## Spectral Effects

Spectral Effects on Direct-Irradiation Absorptance of Five Collector Coatings (79-HT-18) (A) **O 93**

## Spectral Emissivity

Spectral Emissivity of Ceramics at High Temperatures: Silicon Carbide and Silicon Nitride (79-HT-24) (A) **O 93**

## Spectral Shift Controlled Reactor

Resource Utilization and Design Aspects of the Spectral Shift Controlled Reactor (78-WA/NE-8) (A) **Mr 89**

## Spectral Techniques

Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) (A) **My 96**

## Speed Reducer

A New Speed Reducer Design Technique **S 32**

## Spent Fuel

Handle With Care! (ES) **Mr 23**

## Spheres

Natural Convection between Spheres and Cylinders (79-HT-111) (A) **N 108**

## Spherical Bearings

Spherical Bearings: Static and Dynamic Analysis Via the Finite Element Method (79-Lub-1) (A) **D 102**

## Spherical Charges

Geothermal Stimulation with Chemical Explosives (78-Pet-67) (A) **F 127**

## Spherical Pressure Vessels

Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) (A) **S 96**

## Spherical Shells

Creep Buckling of Spherical Shells Using a Comparative Stress Method (79-PVP-3) (A) **Ag 103**

## Spherical Surfaces

Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) (A) **F 130**

## Spheroids

Stability of Liquid-Filled Spinning Spheroids Via Liapunov's Second Method (79-APM-12) (A) **S 106**

## Spinning Frames

Noise Reduction on Textile Ring-Spinning Frames (79-DET-33) (A) **N 112**

## Spinning Process

Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) (A) **Ja 92**

## Spiral Vibrations

Spiral Vibrations Due to the Seal Rings in Turbogenerators Thermally Induced Interaction between Rotor and Stator (79-DET-61) (A) **N 115**

## Spline Coupling

A Reliable Spline Coupling (78-WA/Aero-11) (A) **Ap 101**

Spline Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**

**Spoerly, D. E.** Steam Plant Operator Training (79-IPC-Pwr-4) (A) **D 101**

## Spot Welding

Computer-Controlled Laser Welding (BTR) **Ja 49**

**Sprague, T. S.** Elections to Fellow Grade **Je 86**

## Sprayed Ceramic Seal System

Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) (A) **Ap 89**

## Spreader Stoker Boilers

Evaluation of Particulate Emissions from Spreader Stoker Boilers (78-IPC-Fu-1) (A) **Ja 91**

**Sprenger, G. S.** A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAS-26) (A) **O 89**

**Spriggs, D. M.** Hydraulically Actuated Treating Packers for Dry Rock Geothermal Applications (79-PVP-23) (A) **Ag 105**

**Spring, A. H.** A High Reliability Straight Tube LMFBF Steam Generator Design (79-NE-4) (A) **S 104**

## Spring Design

A Generalized Torsion Spring Design Method (78-DET-82) (A) **Ja 90**

## Spring Stiffness

The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**

## Spring

Optimal Design of Helical Springs for Minimum Weight by Geometric Programming (78-WA/DE-1) (A) **Mr 84**

For Spring Materials: A Simple Test of Stress Relief Annealing **F 38**

## Spur Gear Tooth

Dynamic Stress Analysis of a Spur Gear Tooth (79-DET-38) (A) **N 112**

**Spurlock, J. M.** Closed-Ecology Life Support Systems (CELSS) for Long-Duration, Manned Missions (79-ENAS-27) (A) **O 88**

**Spurrier, F. R.** A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-62) (A) **JI 92**

## Squeeze Films

Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**

## SRRC Tuff-to-Yarn Processing System

Dust-Trash Removal by the SRCC Tuff-To-Yarn Processing System (78-Tex-2) (A) **Ja 92**

## Squeeze Film Dampers

Nonlinear Response of Short Squeeze Film Dampers (79-Lub-24) (A) **D 103**

**Stribnik, F.** Development of an Improved Sabatier Reactor (79-ENAS-36) (A) **O 88**

**Srinivasan, V.** In-Plane Vibration of Annular Disks Using Finite Elements (79-DET-100) (A) **D 105**

**St. Hilaire, A. O.** Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **JI 99**

## Stability

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part II—Stability and Flutter Boundaries (79-GT-112) (A) **JI 97**

Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 98**

Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) (A) **S 107**

Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **JI 99**

The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) (A) **S 108**

Lateral Dynamics and Stability of the Skateboard (79-APM-14) (A) **S 106**

Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) (A) **Ap 94**

Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**

A New Proppant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**

Nonparallel Effects on the Stability of Jet Flows (78-WA/PM-16) (A) **My 104**

A Simplified Stability Criterion for Nonconservation Systems (79-APM-19) (A) **S 107**

Stability of Liquid-Filled Spinning Spheroids Via Liapunov's Second Method (79-APM-12) (A) **S 106**

The Stability of a Moving Elastic Strip Subjected to Random Parametric Excitation (79-APM-10) (A) **S 106**

Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) (A) **S 106**

Stability and Transient Characteristics of Four Multilobe Journal Bearing Configurations (79-Lub-3) (A) **D 102**

Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/OCE-2) (A) **F 131**

Whirling Response and Stability of Flexibly Mounted, Ring-

Type Flywheel Systems (79-DET-71) (A) **N 118**

## Stability Analysis

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/PM-25) (A) **Ja 93**

Stability Analysis of Rotor-Bearing Systems Using Component Mode Synthesis (79-DET-63) (A) **N 113**

## Stabilization

Stabilization of Crimp in Bulk Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Ja 92**

## Stabilizing System

Helicopter Position Stabilizing System (BTR) **My 55**

**Stachiw, J. D.** Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) (A) **F 130**

**Stachyra, L. J.** Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

## Stack Gases

New System Samples Stack Gases (EN) **O 61**

**Stadjuhar, S. A.** Matching Solar Systems to Industrial Needs (79-Sol-28) (A) **Ag 95**

**Stahl, P.** Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**

## Stainless Steel

Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/PM-11) (A) **My 103**

Decontaminating Reactor Components (BTR) **Mr 48**

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) (A) **S 102**

Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**

Sensitization Kinetics in Type 304 Stainless Steel (79-PVP-85) (A) **S 99**

## Stainless-Steel Drivebelts

Durable, Nonslip, Stainless-Steel Drivebelts (BTR) **JI 48**

## Stainless Steel Forgings

Forgings Replace Castings on Larger Turbine Vanes (BTR) **Mr 51**

## Stainless Steel Liners

High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**

**Stalmach, D. D.** Optimum Design of Spacecraft Radiators for Large Capacity or Long Duration Mission Applications (79-ENAS-10) (A) **O 87**

## Stamp

The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) (A) **S 108**

## Stand Off Distance Effect

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/Prod-11) (A) **My 102**

## Standby Diesel-Generator Sets

The Special Requirements for Nuclear Application Standby Diesel-Generator Sets (78-DGP-6) (A) **Ja 86**

**Stanislav, M.** The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **JI 98**

**Stankovich, I.** Kaiser Congratulated (C) **Ja 45**

**Stanley, J. D.** Design of an HTGR for High-Temperature Process Heat Applications (79-JPGC-NE-2) (A) **D 96**

**Stanway, R.** Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**

**Starken, H.** Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Ja 99**

## Starved Conjunctions

Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus II—Starved Conjunction (78-Lub-1) (A) **Ja 93**

**Staszek, F. M.** Elections to Fellow Grade **Ag 90**

## State Government Role

The Role of State Government in Industrial Energy Conservation (78-TS-7) (A) **F 130**

## Static Analysis

Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves (78-WA/RT-13) (A) **My 93**

Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **Mr 96**

The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**



## Static Charge

Electrified Bees (BTR) **S 54**

## Static Pressure

The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 89**

## Static Properties

Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**

## Station Flywheel Storage

Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

## Stationary Engines

Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Ja 86**

## Stationary Linear Systems

Some Connections Between Modern and Classical Control Concepts (78-WA/DSC-20) (A) **Ap 96**

## Stationary Response

Stationary Response of a Randomly Parametric Excited Nonlinear Systems (78-WA/APM-13) (A) **My 103**

## Stationary Sources

Catalytic Reduction of Nitrogen Oxides Emitted from Stationary Sources (78-Pet-29) (A) **F 122**

## Statistical Analysis

Statistical Analysis of the Influence of Process Variables on Noise Generation in Impact Hot Forming (79-DET-29) (A) **N 111**

## Statistical Approach

Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**

## Statistical Filter

Statistical Filter Warns of Reactor Core Problems (BTR) **N 63**

## Statistical Microgeometry

Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94**

## Statistical Source Book

The World Energy Book: An A-Z, Atlas and Statistical Source Book (CB) **Ag 108**

## Stator Blade Wake

Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor (79-GT-9) (A) **Je 99**

## Stator Rows

The Time-Variant Aerodynamic Response of a Stator Row Including the Effects of Airfoil Camber (79-GT-110) (A) **Ag 95**

## Stators

Spiral Vibrations Due to the Seal Rings in Turbogenerators Thermally Induced Interaction Between Rotor and Stator (79-DET-61) (A) **N 115**

**Staub, F. W.** Local Heat Transfer Coefficients Around Horizontal Tubes in Fluidized Beds (79-HT-75) (A) **N 105**

**Staudte, R.** Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Ja 96**

## Steady Pressure

The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Ja 103**

## Steady-State Characteristics Analysis

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) (A) **Ja 94**

## Steady-State Laying Conditions

The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**

## Steam

America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 84**

Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ja 104**

Co-Generation of Steam and Electrical Energy for a Manufacturing Plant as Affected by Economy of Scale (78-IPC-Pwr-4) (A) **Ja 91**

Conference on the Properties of Steam (NR) **F 69**

Dielectric Constant of Water and Steam **S 44**

Double Reheat Steam Cycles (ES) **N 32**

Energy Conservation Through Condensate Recovery (78-IPC-Pwr-1) (A) **Ja 90**

Riley and Babcock (ES) **Ja 20**

## Steam Boiler

Waste-Fueled Steam Boiler (IF) **D 86**

## Steam-Cooled Blading

Steam-Cooled Blading in a Combined Reheat Gas Turbine Reheat Steam Turbine Cycle: Part I—Performance Evaluation (79-JPGC-GT-2) (A) **D 99**; Part II—Design Considerations (79-JPGC-GT-3) (A) **D 99**

## Steam Dump

Noise Level Considerations Associated with Power Plant Condenser Steam Dump (79-PVP-9) (A) **Ag 104**

## Steam Engines

Revival of the Steam Engine (ES) **Mr 23**

## Steam Generation

Application of Low-Btu Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Ja 91**

An Award of Honor (ES) **S 21**

## Steam Generator

Fluidized Bed Moves Along (ES) **Mr 22**

## Steam Hammer

Comparison of Steam Hammer Dynamic Testing with Analysis for Main Steam Piping (79-PVP-22) (A) **Ag 105**

## Steam Heater

Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**

## Steam Locomotives

Cheers for October (C) **D 54**

ME Rekindles Fond Memories (C) **D 54**

## Steam Piping

Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) (A) **Je 93**

## Steam Plant Operator Training

Steam Plant Operator Training (79-IPC-Pwr-4) (A) **D 101**

## Steam Power

Steam Power and British Industrialization to 1860 (CB) **Ja 106**

## Steam Power Plants

Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Ja 90**

MHD Subsystem (ES) **O 19**

## Steam-Powered Pump

Solar-Powered Pump (BTR) **D 43**

## Steam Production

Cogeneration Produces Savings (BTR) **Ap 51**

## Steam Turbine Cycles

The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**; Part II—The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**

A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Ener-3) (A) **Je 92**

## Steam Turbine Plant

The Classroom Design of a COGAS Plant by Naval Systems Engineering Students (79-GT/Isr-7) (A) **O 83**

## Steam Turbines

Design and Operation of Large Fossil-Fueled Steam Turbines Engaged in Cyclic Duty (79-JPGC-Pwr-7) (A) **D 97**

Development of an Automated Life Prediction System for Steam Turbine Rotors (78-WA/DE-15) (A) **Mr 86**

The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Ja 103**

Forgings Replace Castings on Larger Turbine Vanes (BTR) **Mr 51**

A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Ja 102**

A Power Company's Approach to Improved Steam Turbine Availability (78-WA/Pwr-1) (A) **Mr 90**

Problems of Moisture Separation in Wet Steam Turbines (78-WA/GT-4) (A) **Ag 88**

Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Ja 97**

## Steam Wake

Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Je 89**

## Steamboats

Steamboats Come True: American Inventors in Action (CB) **N 119**

**Stecher, P. G.** (editor) Industrial and Institutional Waste Heat Recovery (CB) **Je 104**

## Steel

Steel for Coal-Conversion Plants (EN) **O 64**

## Steel Alloys

New Cast Steel Alloys Readied for Arctic Gas Service (BTR) **S 60**

## Steel Cases

The Case for Welded Steel Cases (BTR) **Ap 82**

## Steel-Like Fibers

DOT Studies Steel-Like Fibers (BTR) **Mr 51**

## Steel Pipes

Metallurgical Studies of Deepwater Pipeline Laid by Reeled Pipe Method (78-Pet-55) (A) **F 126**

## Steel Plates

Nonmagnetic Steel Plates (IF) **Ag 54**

## Steels

Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94**

Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Ja 98**

Experimental Study of Fatigue Crack Initiation Due to Rapid Thermal Cycling in Pressure Vessel Steels (79-PVP-109) (A) **S 102**

Fatigue Crack Growth in 2 1/4Cr-1Mo Steel Exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**

Fatigue Threshold Stress Intensity and Life Estimation of ASTM-A106B Piping Steel (79-PVP-86) (A) **S 100**

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Je 90**

Metal Buildings Booming (NB) **Ja 64**

Physical Metallurgy and the Design of Steels (CB) **My 107**

Relation Between Wear of Cr-Ni Steels and Debris Transport at High Temperature (950°C) (79-Lub-11) (A) **D 103**

Relationships Between Mechanical Properties and the Extension and Arrest of Unstable Cracks in Line Pipe Steels (79-PVP-76) (A) **S 99**

The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/Prod-15) (A) **My 99**

Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**

## Steering Forces

Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MH-3) (A) **My 98**

**Steger, R. L.** Unbalanced Response of a Large Rotor-Pedestal-Foundation System Using an Elastic Half-Space Soil Model (79-DET-55) (A) **N 115**

**Stein, R. P.** Heat Transfer from Heat Generating Molten UO<sub>2</sub>: Interpretations of the Available Experimental Data (79-HT-115) (A) **N 108**

**Stein, T. R.** Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Ja 99**

**Steiner, D.** Fusion Power Development: Status and Prospects (79-JPGC-NE-1) (A) **D 96**

**Steiner, R. B.** Evaluation of Alternative Steam Sources for Industrial Cogeneration (79-IPC-Pwr-2) (A) **D 101**

## Stenosis

Investigation of a Pulsatile Flowfield Downstream from a Model Stenosis (78-WA/Bio-6) (A) **Mr 91**

## Step Journal Bearings

Experimental-Theoretical Comparison of Instability Onset Speeds for a Three Mass Rotor Supported by Step Journal Bearings (79-DET-56) (A) **N 115**

## Step Thrust Bearing

An Analytical Solution for Thermal Behavior of the Step Thrust Bearing (79-Lub-19) (A) **D 104**

**Stephen, J. D.** Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**

**Stephens, D. R.** The LLL Underground Coal Gasification Project: 1978 Status (79-PVP-93) (A) **S 100**

## Stereoscopic Instrumentation

Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**

## Sterilization

Heat Transfer and the Killing of Bacteria in Thermal Sterilization of Meat Roll (78-WA/HT-56) (A) **Mr 97**

**Stetson, A. R.** Application of Abrasive Coatings to Clearance Control in the Gas Turbine (79-GT-48) (A) **Ag 96**

**Stevens, G. A.** Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal



- Mixtures (78-WA/APC-2) (A) **Ap 103**
- Stevens, J. G.** Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Jl 103**
- Stevenson, A. E.** Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**
- Stewart, H. B.** HTGR Strategy for Reduced Proliferation Potential (78-WA/NE-11) (A) **Mr 89**
- Stewart, H. G.** Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Je 100**
- Stewart, J. T.** Coal Conversion for Feedstock and Fuel (78-Pet-17) (A) **Ja 98**; Converting Coal to Liquid/Gaseous Fuels **Je 34**
- Stewart, N. D.** Noise Reduction on Textile Ring-Spinning Frames (79-DET-33) (A) **N 112**
- Stewart, O. L.** Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) (A) **Ap 89**
- Stice, J.** Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**
- Stickel, F. V.** Geothermal Power and Water Production Studies at the University of California (78-WA/Ener-7) (A) **Je 93**
- Sticking Temperature**  
The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**
- Stiffness**  
The Effect of Spring Stiffness, Friction Damping Level, and/or Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**  
On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) (A) **Je 93**  
Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Ja 95**
- Stiffness Matrices**  
Accurate Reduction of Stiffness and Mass Matrices for Vibration Analysis and a Rationale for Selecting Master Degrees of Freedom (79-DET-18) (A) **N 110**
- Stiffness Ratios**  
Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments\* (79-GT-111) (A) **Jl 98**; Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Jl 97**
- Stimpson, L. D.** Cooling a Radioisotope Power Source in the Space Shuttle Orbiter (79-ENAS-44) (A) **O 90**
- Stimulation Process**  
Drillhole Stimulation in Iceland (78-Pet-24) (A) **Ja 98**
- Stimulation Tool**  
Kine-Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Ja 99**
- Stingelin, V.** Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Jl 91**
- Stirling Cycle Machines**  
A Numerical Model for Stirling Cycle Machines (79-GT/Int-16) (A) **O 84**
- Stirling Engine**  
The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Ener-4) (A) **Je 92**
- Stochastic Models**  
Dynamic Acceptance Test for Machine Tools Based on a Nonlinear Stochastic Model (79-DET-21) (A) **N 110**
- Stock Spectrum Ratios**  
Stock Spectrum Ratios Applied to the Comparison of Pulse Signatures (79-DET-8) (A) **N 109**
- Stockhouse Equipment**  
Design of the Modern Blast Furnace Stockhouse and Charging Conveyor (78-WA/MH-2) (A) **My 97**
- Stockman, N. O.** An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Jl 91**
- Stoddard, T.** No If in Metrication (C) **O 41**
- Stoker-Fired Boilers**  
Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**  
Field Tests of Industrial Stoker Fired Boilers for Emission Control (78-WA/APC-9) (A) **My 96**  
Industrial Application of a 66,000 lb/hr Vibrating Stoker Fired Boiler (78-IPC-Fu-4) (A) **Ja 91**  
Operation and Emission of a Stoker-Fired Boiler White Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**  
Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC-Fu-3) (A) **Ja 91**
- Slotta, W. J.** Structural Cost Optimization of Photovoltaic Central Power Station Modules and Support Structure (79-Sol-17) (A) **Ag 94**
- Stonesifer, R. B.** An Analysis Procedure for Predicting Weld Repair Residual Stresses in Thick Walled Vessels (79-PVP-31) (A) **Ag 105**; An LEFM Analysis for the Effects of Weld Repair Induced Residual Stresses on the Fracture of the HSST ITV-8 Vessel (79-PVP-30) (A) **Ag 105**
- Storage Capacities**  
Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**
- Storage Facility**  
Air-Storage Gas-Turbine Plant (IF) **S 84**  
Nuclear Waste Storage (NB) **Jl 85**
- Storage Panels**  
Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**  
A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Je 96**
- Storage Plants**  
Making the Desert Bloom (ES) **D 21**
- Storage Systems**  
Hydrogen as an Automotive Fuel (BTR) **Je 52**  
Numerical Simulation of Dual-Media Thermal Energy Storage Systems (79-HT-35) (A) **O 94**  
Performance Evaluation of the New Mexico State University Solar House (78-WA/Sol-8) (A) **Je 96**  
Salting Away Energy (ES) **Ja 18**  
A Simple Solar Gas Turbine Plant (79-GT-90) (A) **Jl 95**  
System May Speed Growth of Solar Energy Storage (BTR) **Je 55**
- Storage Tanker**  
Deepwater Production Risers (78-Pet-13) (A) **F 122**
- Storage Tanks**  
The All-Aluminum Polyframe Dome Structure: A New Concept in Tank Roofs for the Petroleum Industry (78-Pet-78) (A) **F 128**  
Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**
- Storage Vessels**  
High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**
- Stored Fuels**  
Ultimate Wave Machine (BTR) **Ag 44**
- Stored Products Pests**  
Insect Control via Pathogenic Sex Lure (BTR) **Jl 43**
- Storm, R. S.** Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Jl 94**
- Stover, J. F. (author)** Iron Road to the West: American Railroads of the 1850's (CB) **S 111**
- Straight Gas Path Seals**  
Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Ja 95**
- Straight Turbine Cascades**  
Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Je 99**
- Straightwarp Conveyor Belting**  
High-Tension Straightwarp Conveyor Belting (BTR) **My 54**
- Strain**  
Cryogenics: Applications Unlimited (BTR) **Jl 50**
- Strain Gage**  
Finite Element Analysis of a Cylinder-to-Cylinder Intersection (79-PVP-64) (A) **S 98**
- Strain Limits**  
Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**
- Stratitz, J. F.** Proper Flare Operation Conserves Energy (78-Pet-33) (A) **F 123**
- Stranded Mammals**  
Mammal Strandings: An Unsolved Mystery (BTR) **S 57**
- Strang, G.** Numerical Computations in Nonlinear Mechanics (79-PVP-103) (A) **S 102**
- Strasberg, L.** Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**
- Strategic Petroleum Reserve Program**  
"Right On" and Resonant (C) **F 55**
- Stratification**  
Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**
- Stratified Fluids**  
Mixed Layer Growth and Heat Transfer in a Stratified Fluid Heated from Below (79-HT-107) (A) **N 108**
- Stratified Porous Formations**  
Primary Factors Governing Hydraulic Fractures in Heterogeneous Stratified Porous Formations (78-Pet-47) (A) **F 125**
- Straubel, M.** Distributor Injection Pump, Type VE, Design and Examples for Application (78-DGP-7) (A) **Ja 87**
- Streeter, V. L.** Elections to Fellow Grade **Ja 84**
- Streeton, D.** U. S. vs. German Energy Consumption (C) **Ap 43**
- Strengthening Mechanisms**  
Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/Prod-15) (A) **My 99**
- Strenkowski, J.** Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**
- Stress**  
An Approximate Analysis of Foundation Stresses in Horizontal Pressure Vessels (79-NE-1) (A) **S 104**  
Axisymmetric Bending of Annular Plates (78-WA/APM-27) (A) **Je 93**  
Bursting Experiment of a High Pressure Multiwall Test Vessel (79-PVP-96) (A) **S 101**  
Combination of Modal Forces and Stresses in the Seismic Design of Piping Systems (79-PVP-112) (A) **S 102**  
Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**  
Cylindrical Panels of Various Shapes for Pressure Vessels (79-PVP-110) (A) **S 102**  
Determination of Stress Intensification Factors for Integrally Reinforced 45-Deg Lateral Branch Connections (79-PVP-98) (A) **S 101**  
Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) (A) **S 99**  
Estimation of Stress Intensity Factors for Embedded Irregular Cracks Subjected to Arbitrary Normal Stress Fields (79-PVP-90) (A) **S 100**  
Fatigue Threshold Stress Intensity and Life Estimation of ASTM-A106B Piping Steel (79-PVP-86) (A) **S 100**  
Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle (78-WA/APM-1) (A) **My 102**  
Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) (A) **S 106**  
A General Fatigue Evaluation Method (Elastic Stress or Plastic Strain with Constant or Varying Principal Direction) (79-PVP-77) (A) **S 99**  
Harmonic Holes for Nonconstant Fields (79-APM-30) (A) **S 108**  
An In-Field Method for the Determination of the Normal Plastic Anisotropy (R) Value for Sheet Materials (78-WA/Prod-41) (A) **Je 90**  
Influences of Flaw Shapes on Stress Intensity Factors for Pressure Vessel Surface Flaws and Nozzle Corner Cracks (79-PVP-65) (A) **S 98**  
Simplified Inelastic Analysis in Helical Coil Heat Exchanger Design (79-NE-2) (A) **S 104**  
Stress in Glass Fibers Induced by the Draw Force (78-WA/APM-21) (A) **My 104**  
The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**
- Stress Analysis**  
The Allusuisse Truck (78-WA/RT-15) (A) **My 93**  
Dynamics Stress Analysis of a Spur Gear Tooth (79-DET-38) (A) **N 112**  
Stress Analysis (C) **O 42**
- Stress Analysis Problems**  
Solving Three Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) (A) **F 127**
- Stress Concentration**  
Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104**
- Stress Distribution**  
An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**
- Stress Field**  
Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**  
Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**
- Stress-Intensity Factor**  
Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) (A) **S 98**
- Stress Model**  
Flow Stress Model in Metal Cutting (78-WA/Prod-27) (A) **My 100**

### **Stress Relief Annealing**

For Spring Materials: A Simple Test of Stress Relief Annealing **F 38**

### **Stress-Strain Curves**

On the Hardening Response in Small Deformation of Metals (78-WA/APM-17) (A) **My 104**

### **Stress-Strain Relationship**

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/Prod-6) (A) **My 98**

### **Stress Tensor**

Determination of the Reynolds-Stress Tensor with a Single Slanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ji 98**

### **Stresses**

Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**

An Analysis Procedure for Predicting Weld Repair Residual Stresses in Thick Walled Vessels (79-PVP-31) (A) **Ag 105**

Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**

Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**

Can Nozzle Design be Effectively Improved for Drilling Purposes (78-Pet-51) (A) **F 125**

A Comprehensive Study of Marine Drilling Risers (78-Pet-61) (A) **F 126**

Cryogenics: Applications Unlimited (BTR) **Ji 90**

Friction Damping of Resonant Stresses in Gas Turbine Engine Airfoils (79-GT-109) (A) **Ag 99**

Kine-Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Ja 99**

An LEFM Analysis for the Effects of Weld Repair Induced Residual Stresses on the Fracture of the HSST ITV-8 Vessel (79-PVP-30) (A) **Ag 105**

Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 99**

A New Propellant for Hydraulic Fracturing (78-Pet-34) (A) **F 122**

Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) (A) **My 92**

Stresses in Adhesive Lap Joints with Pre-Bent Adherends (79-DET-105) (A) **D 106**

Stresses in Elbows Created by Supporting Lug Load (79-PVP-51) (A) **S 97**

### **Stretched Cylindrical Shell**

Stress Concentration in a Stretched Cylindrical Shell With Two Elliptical Holes (78-WA/APM-18) (A) **My 104**

Strickland, J. F. A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 90**

Stringer, J. Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**

### **Strip Mining**

Wheat from Old Tires (BTR) **Ap 49**

Strong, A. B. A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Je 99**

### **Strontium-90**

Radioisotope Generators for Remote Areas (BTR) **N 58**

### **Structural Analysis**

A Family of Programmable Mechanical Test Systems (BTR) **O 49**

Structural Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-68) (A) **S 96**

### **Structural Bearings**

The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**

### **Structural Buckling**

Pictorial Goof (C) **D 53**

### **Structural Ceramic Materials**

Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**

### **Structural Components**

Composite Modal Damping in Structures (79-PVP-71) (A) **S 96**

Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**

### **Structural Cost Optimization**

Structural Cost Optimization of Photovoltaic Central Power

Station Modules and Support Structure (79-Sol-17)

(A) **Ag 94**

### **Structural Design**

Application of Core Structural Design Guidelines in Conceptual Fuel Pin Design (79-PVP-56) (A) **S 97**

Control of Seismic Response of Piping Systems and Components in Power Plants by Base Isolation (79-PVP-55) (A) **S 97**

An Introduction to Base Isolation (79-PVP-69) (A) **S 98**

Optimum Structural Design Under Constraint on Failure Probability (79-DET-114) (A) **D 106**

Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**

### **Structural Design Criteria**

Basis of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**

Experience in the Use of FBR Core Component Structural Design Criteria as Applied FFTF (79-PVP-48) (A) **S 97**

### **Structural Elements**

Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**

### **Structural Health Assessment**

Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**

### **Structural Integrity**

Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines—An Overview (78-WA/GT-13) (A) **Ap 90**

The Response of a Long Cylinder to Lateral Air Blast Loading (79-DET-44) (A) **N 113**

Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**

Structural Integrity Specialists Gather in Washington, D.C. **Ji 80**

### **Structural Joints**

Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**

### **Structural Loads**

Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**

### **Structural Members**

Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**

### **Structural Motion**

A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**

### **Structural Properties**

The CH-46 Rotor Blade Transition from Metal to Composite Materials (78-WA/Aero-9) (A) **Ap 101**

### **Structural Stability**

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 126**

### **Structural Steels**

Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

### **Structural Support Members**

The Use of Pre-Insulated Pipe Supports as Structural Support Members (79-PVP-47) (A) **Ag 107**

### **Structural Vibrations**

The Control of Structural Vibration by Frictional Damping in Electro Discharge Machined Joints (79-DET-79) (A) **N 116**

Ice Floe Induced Structural Vibrations (78-Pet-21) (A) **Ja 98**

### **Structure Property Relations**

Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**

Strumpf, H. J. Conceptual Design of a Pulverized Coal Furnace for a Utility Size Closed-Cycle, Gas-Turbine Power Plant (79-GT-158) (A) **Ji 100**

Stubbings, M. D. Reliability and Failure Analysis of High Utilization Railway Cars (78-WA/RT-1) (A) **My 92**

Stuckenbruck, S. Laminar Heat Transfer in Porous Ducts with Variable Suction (78-WA/HT-41) (A) **Mr 96**

### **Student Activities**

Student Coverage Appreciated (C) **Ji 39**

### **Student Designs**

Students Design Do-It-Yourself Solar Heating System (EN) **Mr 64**

### **Students Engineering Awards**

Best Berkeley Students are Engineering Majors (EN) **D 77**

### **Student Engineers**

Fusion Program (EN) **My 70**

Student Challenge to Improve Model Pumps (EN) **My 70**

### **Student Intern Program**

Student Intern Program (EN) **Ja 61**

### **Student Members**

A Give-and-Take Session at WAM (CC) **F 79**

### **Student Minorities Program**

GEM Increases Stipend (EN) **S 72**

### **Student Participation**

Equipment Design Competition for Waste Refuse (EN) **Ja 60**

### **Student Section**

WAM Sees Big Turnout for M.E. Department Heads and Students (EN) **F 72**

### **Student Turnout**

WAM Student Turnout (C) **My 45**

### **Students**

Scientists Must Write: A Guide to Better Writing for Scientists, Engineers and Students (CB) **N 118**

Sturges, G. J. Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Ji 104**

Su, S. M. A Mathematical Model for Drill Point Design and Grinding (78-WA/Prod-35) (A) **My 101**

Subramaniam, A. K. Evaluation of Internal Combustion Engine Valve Trains by an Empirically Tuned Simulation Model (78-DGP-9) (A) **Ja 87**

Subsea Atmospheric Manifold Center

Design and Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**

### **Subsea Chamber Design**

Subsea Chamber Design for the Dry Containment of Well-head Equipment (78-Pet-43) (A) **F 125**

### **Subsea Production Controls**

Selection of Production Controls to Obtain Operating Objectives (78-Pet-6) (A) **Ja 97**

### **Subsea Well Completion**

Characteristics of a Dry, Subsea Well Completion (78-Pet-41) (A) **F 124**

### **Subsonic Compressor Stage**

Blade-Row Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Ji 96**

### **Subsonic Inlet Design**

An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Ji 91**

### **Subsonic Turbulent Flow**

Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Je 89**

### **Subsurface Safety Valves**

Selection of Sizing of Velocity Actuated Subsurfaces Safety Valves (78-Pet-8) (A) **Ja 97**

### **Substructure Tests**

A Method of Damping Synthesis From Substructure Tests (79-DET-11) (A) **N 109**

### **Subsynchronous Vibration**

Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Subsynchronous Vibration (79-GT-86) (A) **Ji 95**

### **Suburban Transport**

Energy Problems and Urban and Suburban Transport (CB) **Ap 104**

### **Suction**

Laminar Heat Transfer in Porous Ducts with Variable Suction (78-WA/HT-41) (A) **Mr 96**

### **Sugarcane Plantations**

Hawaiian Sugarcane Energy Plantations (79-Sol-31) (A) **Ag 96**

Suh, N. P. Vortex Motions Induced by V-Grooved Rotating Cylinders and their Effect on Mixing Performance (79-FE-2) (A) **O 84**

### **Sulfur**

Sulfur Eaters (BTR) **S 57**

### **Sulfur Content**

Coal Desulfurization Prior to Combustion (CB) **F 135**

### **Sulfur Dioxide Standards**

The Wrong Villain (ES) **Ag 19**

### **Sulfur Emissions**

The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Ji 103**

Sullivan, D. Energy Consumption and Conservation in University Buildings (78-WA/PEM-4) (A) **My 93**

Sullivan, J. A. Technology Transfer in Biomechanics of Human Spine (78-DET-88) (A) **Ja 90**

Sullivan, J. E. Experimental Study of the Transition from Forced to Natural Circulation in EBR-II at Low Power

- and Flow (79-HT-10) (A) **O 92**
- Sulphur Neutralization**  
Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) (A) **Je 97**
- Sulzer Diesel Engines**  
Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives (78-DGP-15) (A) **Ja 87**
- Summer Comfort Features**  
Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Text-5) (A) **Ja 92**
- Summers, D. A.** Can Nozzle Design be Effectively Improved for Drilling Purposes (78-Pet-51) (A) **F 125**
- Sun, T. H.** The Analysis of Heat Transfer with and without Condensation in a Heat Pipe Heat Exchanger (78-WA/HT-59) (A) **Ap 92**
- Sun-Powered Irrigation**  
Expand Sun-Powered Irrigation (BTR) **Ji 45**
- Sund, D. S.** Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**
- Sundarajan, C.** Combination of Modal Forces and Stresses in the Seismic Design of Piping Systems (79-PVP-112) (A) **S 102**; Probabilistic Seismic Response Analysis of Nuclear Power Plant Structures (79-PVP-73) (A) **S 99**; Ice Floe Induced Structural Vibrations (78-Pet-21) (A) **Ja 98**
- Sun's Energy**  
Sun Potion (EN) **D 78**
- Superconducting Generators**  
Commercial Superconducting Generator (BTR) **Je 50**
- Superconductivity**  
Superconducting Generator (ES) **Je 19**
- Supercritical Compressor Cascades**  
Design and Testing of Two Supercritical Compressor Cascades (79-GT-11) (A) **Je 99**
- Supercritical Power Transmissions**  
Nonsynchronous Vibrations Observed in a Supercritical Power Transmission Shaft (79-GT-146) (A) **Ag 100**
- Superheaters**  
Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**
- Supersonic Compressor**  
Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Ji 91**
- Supersonic Flow**  
Total Temperature Probe Calibration in Supersonic Rarefied Flows (78-WA/HT-1) (A) **Mr 93**
- Supersonic Shocks**  
Shock Boundary Layer Interaction on High Turning Transonic Turbine Cascades (79-GT-37) (A) **Ag 98**
- Supplementary Fuel**  
Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**
- Support Systems**  
Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **My 93**
- Suppressed Innovation**  
Innovation on the Skids (BTR) **Ji 47**
- Surface Analysis Techniques**  
Scanning Microscopy in Microcircuit Failure Analysis (78-WA/Aero-22) (A) **Ap 102**
- Surface Body**  
Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) (A) **Ja 98**
- Surface Boundary Layers**  
Axial-Flow Compressor Turning Angle and Loss by Inviscid-Viscous Interaction Blade-to-Blade Computation (79-GT-5) (A) **Je 98**
- Surface Carbon**  
"The Earth Burps Methane..." (BTR) **Ji 42**
- Surface Coefficients**  
Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-28) (A) **Ji 90**
- Surface Conditions**  
Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**
- Surface Deformations**  
Detecting Surface Deformations Photographically (BTR) **Ag 45**
- Surface Distortion**  
Heat Pipe Mirrors for High-Power Lasers **My 34**
- Surface Distribution**  
An Approach to Optimum Subsonic Inlet Design (79-GT-51) (A) **Ji 91**
- Surface Etching Method**  
A New Method for Etching Surfaces of Bearings and Other Machine Elements (79-Lub-9) (A) **D 103**
- Surface Flaws**  
An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites (78-WA/Aero-8) (A) **Ap 101**
- Surface Flaws**  
Influences of Flaw Shapes on Stress Intensity Factors for Pressure Vessel Surface Flaws and Nozzle Corner Cracks (79-PVP-65) (A) **S 98**
- Surface Flow**  
An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**
- Surface Function Analysis**  
Surface Function Analysis Using a Desk-Top Calculator (79-DE-7) (A) **Ag 102**
- Surface Geometry**  
Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 90**
- Surface Grinding**  
Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**
- Surface Grinding Process**  
An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**
- Surface Heat Fluxes**  
Steady-State Temperature Distribution in a Rotating Roll Subject to Surface Heat Fluxes and Convective Cooling (79-HT-60) (A) **N 104**
- Surface Imperfections**  
Behaviour of Metallic Safety Rupture Diaphragms Containing Imperfections (79-DET-107) (A) **D 106**
- Surface Irregularities**  
Locomotive Response to Random Track Surface Irregularities (78-WA/RT-12) (A) **My 93**
- Surface Layers**  
Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **My 99**
- Surface Measurements**  
Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94**
- Surface Module**  
Another Go at Oil Shale (ES) **S 21**
- Surface Pressures**  
The Analysis Contact Stresses in Rolling Element Bearings (78-Lub-2) (A) **Ja 93**
- Surface Production Method**  
Construction of Three-Workpiece Lapping Process (78-WA/Prod-7) (A) **Je 90**
- Surface Representation**  
Solving Three Dimensional Stress Analysis of Problems by a Surface Representation Alone (78-Pet-77) (A) **F 127**
- Surface Roughness**  
Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Ji 95**
- Surface Roughness**  
The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Ji 96**
- Surface Roughness**  
A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**
- Surface Roughness**  
Strongly Anisotropic Rough Surfaces (78-Lub-16) (A) **Ja 95**
- Surface Roughness**  
Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**
- Surface Shapes**  
Liquid Jet Impingement Normal to a Disk in Zero Gravity (78-WA/FE-1) (A) **Je 98**
- Surface Solution**  
The Production of Vorticity and Its Effects on the Flow in Centrifugal Compressor Impellers (79-GT-113) (A) **Ji 96**
- Surface Stiffness**  
Nonlinear Thermoelastic Behavior of Structural Joints—Solution to be Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**
- Surface Stress Distribution**  
Axisymmetric Bending of Annular Plates (78-WA/APM-27) (A) **Je 93**
- Surface Study**  
Hold-Time Sequence Effects on the Elevated-Temperature Low-Cycle Fatigue of Type 304 Stainless Steel (78-WA/PVP-2) (A) **My 95**
- Surface Temperature**  
Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**
- Surface Temperature**  
Die Temperatures During Production Drop Forging (78-WA/Prod-28) (A) **My 100**
- Surface Temperature**  
Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100**
- Surface Temperature**  
Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 128**
- Surface Temperature**  
Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) (A) **Ja 95**
- Surface Waviness**  
Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**
- Surface Wear Phenomena**  
Second International Conference on Wear of Materials **Je 78**
- Surfactant Loss Problem**  
Oil's Well That Ends Well (BTR) **Ap 51**
- Surfactant Solution**  
Effects of AICI<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**
- Surge-Induced Loads**  
Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**
- Survey Committee Report**  
Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Cars and Equipment (78-WA/RT-14) (A) **My 93**; Locomotives (78-WA/RT-16) (A) **My 93**
- Survey Committee Report**  
Survey Committee Report on Railway Engineering Progress—Locomotives **Ji 35**
- Survey Revelation**  
Pensions and Retirement—Are You Prepared? (NR) **Ji 84**
- Suspension Springs**  
Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**
- Suspension System**  
The LRC Coach Trucks and Suspension (79-RT-4) (A) **Ag 96**
- Suspension System**  
Optimization of Rail Vehicle Operating Speed with Practical Constraints (78-WA/DSC-28) (A) **Ap 96**
- Suspensions**  
Are Active Suspensions Really Necessary? (78-WA/DE-12) (A) **Mr 86**
- Swain, P. D.** Structural Cost Optimization Central Power Station Modules and Support Structure (79-Sci-17) (A) **Ag 94**
- Swain, W. H.** An Iterative Solution for Anisotropic Radiative Transfer in a Slab (79-HT-23) (A) **O 94**
- Suzuki, H.** Application of Data Dependent Systems to Diagnostic Vibration Analysis (79-DET-7) (A) **N 109**
- Suzuki, H.** External Hydrostatic Pressure Loading of Concrete Cylinder Shells (79-PVP-125) (A) **S 104**
- Svenson, F. C.** The Development and Testing of the Space Shuttle Reaction Control Subsystem (78-WA/Aero-20) (A) **Ap 102**
- Svensson, S. O.** Industrial Type Gas Turbines for Off-shore Applications (79-GT-105) (A) **Ji 98**
- Sverdrup, E. F.** Design Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Ji 103**
- Svestka, J. A.** A New Heuristic for Improving the Efficiency Controlled Punch Presses (78-DET-86) (A) **Ja 90**
- Swain, E. F.** Thermal Control Systems for Pod-Mounted Avionics (79-ENAS-2) (A) **O 86**
- Svedish, M. J.** Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/RT-28) (A) **Mr 85**
- Sweeney, F. J., Jr.** Elections to Fellow Grade **D 94**
- Sweet, L. M.** Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**
- Sweitzer, T. A.** The Effect of the Hi-Vol Methodology on Air Quality Modeling (78-WA/APC-11) (A) **My 96**



## Swirling Airflows

Atomization of Water Jets and Sheets in Axial and Swirling Airflows (79-GT-170) (A) **Jl 102**

## Swirling Flow

Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters (78-WA/FM-4) (A) **Mr 92**

## Symmetric Sink Flow

Symmetric Sink Flow Between Parallel Plates (78-WA/FE-6) (A) **Je 89**

## Symmetric Top Problem

A Realistic Solution of the Symmetric Top Problem (78-WA/APM-20) (A) **My 104**

Symonds, P. S. Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) (A) **S 105**

## Synchronous Unbalance Response

Synchronous Unbalance Response of an Overhung Rotor with Disk Skew (79-GT-135) (A) **Jl 99**

## Synthetic Process

Move Toward Closed-Loop Control in Die Casting (BTR) **F 58**

## Synfuels

Synfuels, CO<sub>2</sub>, and the Weather: A Warning (BTR) **N 71**

## Synthetic Foam Materials

Operating Experience with Marine Riser (78-Pet-56) (A) **F 125**

## Synthesis

Criteria of Force Transmission for Linkages and Their Application for Synthesis (79-DET-2) (A) **N 109**

## Synthetic Fuel Production

Water in Synthetic Fuel Production: The Technology and Alternatives (CB) **Ja 100**

## Synthetic Fuels

Energy and the Keystone Cops (WW) **Ag 68**

Hydrogen as an Automotive Fuel (BTR) **Je 52**

## Synthetic Gas

Space-Age Coal Conversion (ES) **Je 18**

Syred, H. Use of Vortex Diodes Applied to Post Accident Heat Removal Systems (79-HT-9) (A) **O 92**

## System Approach

A System Approach to the Evaluation of a Gas Turbine Driven Compressor (79-GT-1) (A) **Je 98**

## System Concept

Nuclear Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Jl 98**

## System Damage Analysis

Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**

## System Design

Limitations of Solar Assisted Heat Pump Systems (78-WA/Sol-1) (A) **Je 94**

## System Design Parameters

Cogeneration—Some Hardware and System Design Parameters (78-IPC-Pw-6) (A) **Ja 91**

## System Development

Community Heat Pumps (ES) **My 20**

## System Guidelines

Art of Pipeline Pigging (78-Pet-74) (A) **F 127**

## System Optimization

Large System Optimization Using Decomposition with Soft Specifications (79-DET-99) (A) **D 105**

## System Parameters

Design of Computer Control for Manufacturing Systems (78-WA/Prod-14) (A) **Mr 99**

Geothermal Power and Water Production Studies at the University of California (78-WA/Ener-7) (A) **Je 93**

## System Requirements

Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Jl 91**

## System Status

System Status of the Water-Cooled Gas Turbine Technology Programs (79-GT-39) (A) **Jl 92**

## Systems Debugging

Debugging Through Video Analysis (BTR) **Ja 51**

## Systems Evaluation

Evaluation of Long-Term Aging Effects on Hydraulic Components and Systems (79-DET-104) (A) **D 105**

Szakallas, L. E. The Characterization of Cam Drive

System Windup (79-DET-24) (A) **N 111**

Szanislo, A. J. The Advanced Low-Emissions Catalytic-Combustor Program: Phase 1—Description and Status (79-GT-192) (A) **Jl 103**

Szenaszi, R. Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Ja 88**

Szymankiewicz, J. Z. (author) Using Simulation to Solve Problems (CB) **O 97**

## T

Tabakoff, W. Study of Metals Erosion in High Temperature Coal Gas Streams (79-GT-88) (A) **Ag 98**; Viscous Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**

Taborok, B. Application of Hamilton's Principle to Large Deformation and Flow Problems (79-APM-18) (A) **S 107**

Tacey, C. F. Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**

## Tactical Fighters

Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Jl 91**

Tadros, S. E. Generalized Laminar Heat Transfer From the Surface of a Rotating Disk (78-WA/HT-29) (A) **Mr 95**

Taif, C. K. Electro-Fluid Pulse-Width Modulated Valve (78-WA/DSC-8) (A) **Ap 94**

Taghavi-Tafreshi, K. Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**

Takada, S. Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**

Takagi, T. Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**

Takahashi, N. Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**

Takahashi, Y. (recipient) Rufus Oldenburger Award **Ja CR-12**: A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**

Takayanagi, M. Analysis of Coupled Vibration Response in a Rotating Flexible Shaft-Impeller System (79-DET-69) (A) **N 115**

Takeuchi, T. Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part 1 (79-GT-127) (A) **Ag 106**

Tall, W. A. An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Jl 91**

Tamanini, F. The Effect of Spacing on the Turbulent Burning of Vertical Parallel Walls (79-HT-26) (A) **O 93**

Tanaka, Y. Construction of Three-Workpiece Lapping Process (78-WA/Prod-7) (A) **Je 90**

## Tandem Design

Optimization for Rotor Blades of Tandem Design for Axial Flow Compressors (79-GT-125) (A) **Jl 98**

## Tandem Driven Compressors

Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Jl 94**

## Tangentially Fired Boiler Furnaces

Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**

Tanida, Y. Unsteady Flow Phenomena in Multiple Disk Fans (79-FE-10) (A) **O 85**

## Tank Car

Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**

## Tank Car Design

Latest Engineering in Tank Car Design (78-WA/RT-11) (A) **My 93**

## Tank Roots

The All-Aluminum Polyframe Dome Structures: A New Concept in Tank Roots for the Petroleum Industry (78-Pet-78) (A) **F 128**

## Tankage Construction

High Performance Positive Expulsion Tankage and Pressure Vessel Constructions (78-WA/Aero-19) (A) **Ap 102**

## TankTainer

TankTainer—A Portable Bulk Liquid Tank Container for Intermodal Service (78-WA/RT-10) (A) **My 93**

## TankTrain®

TankTrain®—A High Volume Bulk Liquid Transportation System (78-WA/RT-9) (A) **My 93**

Tannen, P. S. Hetch Hetchy's in Yosemite (C) **My 45**

## Tapered Gas Path Seals

Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) (A) **Ja 95**

## Target Flowmeters

Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters (78-WA/FM-4) (A) **Mr 92**

Taschner, R. G. Design Improvement of a Friction Brake Plate Through Finite Element Analysis (79-DE-18) (A) **Ag 103**; Generating Ductile Iron Fatigue Data with a Calibrated Tuning Fork System (79-DE-11) (A) **Ag 102**

Tala, M. C. Subsea Chamber Design for the Dry Containment of Wellhead Equipment (78-Pet-43) (A) **F 125**

Talmon, F. B. More on the Black M.E. at Tuskegee (C) **Ag 42**

Taubee, D. B. Eddy Viscosity Calculations of Turbulent Buoyant Plumes (79-HT-51) (A) **N 103**

## Tax War

Fringe Benefits in the War on Taxes (PS) **Ap 72**

Taylor, C. E. Elections to Fellow Grade **Ag 90**

Taylor, C. M. Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Ja 95**

Taylor, D. L. Nonlinear Response of Short Squeeze Film Dampers (79-Lub-24) (A) **D 103**; Optimum Vibration Absorbers for Linear Damped Systems (78-WA/DE-22) (A) **Mr 86**

Taylor, J. I. Identification of Bearing Defects by Spectral Analysis (79-DET-14) (A) **N 110**

Taylor, J. R. An Experimental Study of Endwall and Airtail Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Jl 95**

Taylor, R. E. Spectral Emissivity of Ceramics at High Temperatures: Silicon Carbide and Silicon Nitride (79-HT-24) (A) **O 93**

Taylor, S. The Response of a Hert Machine to Impact Loading Using Finite Elements (79-DET-40) (A) **N 112**

Taylor, W. E. The Impact of Screen Printing on the Cost of Solar Cell Metallization (79-Sol-6) (A) **Ag 93**

## Tech Perspective

Stretching Our Crude Oil Reserves **S 79**

## Technical Development

Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **Jl 100**

## Technical Expertise

In-Service Inspection (ISI)—The Role of the Third-Party Consultant **Ap 37**

## Technical Experts

Technical Experts Find Courtroom Opportunities (NB) **F 71**

## Technical Feasibility

Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Je 100**

## Technical Information

Letter to a Student (WW) **Je 72**

## Technical Terms

McGraw-Hill Dictionary of Scientific and Technical Terms (CB) **Je 103**

## Technical Writing

Scientists Must Write: A Guide to Better Writing for Scientists, Engineers and Students (CB) **N 118**

## Technique Development

Relationships for Nozzle Performance Coefficients (79-GT-145) (A) **Jl 101**

## Technological Changes

Age of Information (NB) **Ag 82**

## Technological Innovation

Innovation on the Skids (BTR) **Jl 47**

## Technology

Accelerating the Commercialization on New Technologies (78-WA/TS-4) (A) **Je 94**

The Advanced Low-Emissions Catalytic-Combustor Program: Phase 1—Description and Status (79-GT-192) (A) **Jl 103**

Advances in Energy Systems and Technology (CB) **Jl 106**

Aircraft Gas Turbine Engine Technology (CB) **Je 104**

Aluminum Technology (EN) **D 76**

Another Point of View (ES) **S 20**

An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Jl 91**

Assessing Microwave Power (C) **D 82**

Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Jl 91**

Bioenergy—The Sky's the Limit (IF) **Jl 55**

The Changing Technical Life of Engineers **Ja 20**

China and USSR Buying More Oil Field Equipment (NB) **Ap 84**

Coal Combustion (C) **O 42**

Coal Use Can Triple, But at Cost to Public and Industry (BTR) **O 48**

Coming: New Coal Transportation Modes **S 36**



Design of a 150-kW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Je 95**

Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Jl 92**

Environmental Effects of Burning Wastes (BTR) **S 61**

Envitec '80 (IF) **D 66**

European Firms in the U.S. (NB) **F 70**

The Future of Numerical Controls **S 27**

Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Jl 91**

Hermes Bound: The Policy and Technology of Telecommunications (CB) **Je 103**

High Energy at Fermilab (ES) **S 20**

Improved Transformer Efficiency (ES) **O 19**

Industrial and Institutional Waste Heat Recovery (CB) **Je 104**

Kiser Congratulated (C) **Je 45**

Low-Cost Solar Cells (ES) **Jl 20**

Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Je 89**

The Microprocessor: Key to Company Survival? (BTR) **Jl 44**

The National Energy Plan and Solar Energy Technology (78-TS-2) (A) **F 129**

OPEC—Meet UTEC! (C) **Jl 40**

Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Jl 104**

Real Time Process Computer Systems (CT) **Ap 71**

Renewable Energy Sources (C) **S 50**

Resonance Equalization in Feedback Control Systems (78-WA/DSC-24) (A) **Ap 96**

Safety Standards in the USSR (C) **S 50**

Shape Memory Alloys (IF) **S 65**

Sharing Technology Information (IF) **Je 54**

The Sixth Energy Technology Conference and Exposition (NR) **F 66**

Speculations on the Future of Numerical Controls (78-WA/DSC-9) (A) **Ap 94**

Steel for Coal-Conversion Plants (EN) **O 64**

Superconducting Generator (ES) **Je 19**

Technology—We Can Do Better **Jl 71**

Teleconferencing Brings Diplomacy into the Space Age (NR) **Je 57**

Torpedo Propulsion Systems (78-WA/Aero-13) **Ap 101**

Utilization of Coal-Oil and Coal-Oil Water Mixtures in Conventional Fuel Oil Systems (79-PC-Fu-1) (A) **D 101**

Water in Synthetic Fuel Production: The Technology and Alternatives (CB) **Je 100**

Wind Power Through Kites **Je 42**

**Technology Assessment**

OTA Sets Priorities (NR) **Ap 62**

**Technology Development**

Status of Coal Gasification Program (79-PVP-46) (A) **S 96**

Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Jl 93**

**Technology Gap**

Blowing the Whistle on Universal Dangers (BTR) **D 55**

Soviet Technology: The Perception Gap **Ap 22**

**Technology Program**

System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Jl 92**

**Technology Readiness**

Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**

**Technology and Society**

Accelerating the Commercialization of New Technologies (78-WA/TS-4) (A) **Je 94**

Air Policy Analysis for the Development of Western Energy Resources (78-TS-4) (A) **F 129**

Alternative Energy Sources and the Developing Nations (78-WA/TS-3) (A) **Je 94**

America's Abundant Electricity Due to the ASME Boiler Code: It All Began with an Appalling Disaster (78-WA/TS-2) (A) **Je 94**

Atlic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**

A Comprehensive Energy Analysis Applied to an Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**

Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

The National Energy Plan and Solar Energy Technology (78-TS-2) (A) **F 129**

A Pragmatic Approach to the Engineer's Involvement in Public Policy Making (78-WA/TS-1) (A) **Je 94**

Prevention of Significant Deterioration (78-TS-3) (A) **F 129**

The Role of State Government in Industrial Energy Conservation (78-TS-7) (A) **F 130**

**Technology Transfer**

Alternative Energy Sources and the Developing Nations (78-WA/TS-3) (A) **Je 94**

A Case Study in Technology Transfer (78-DET-81) (A) **Je 88**

Technology Transfer in Biokinematics of Human Spine (78-DET-88) (A) **Je 90**

Technology Transfer—A Realistic Approach (CB) **Je 103**

Technology Transfer for Solar Energy **Mr 73**

U.S. Engineers Will Aid Developing Nations (NR) **O 59**

**Tecza, J. A.** Design on Elastomer Dampers for a High-Speed Flexible Rotor (79-DET-88) (A) **N 117**; Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Jl 100**; Spine Coupling Induced Nonsynchronous Rotor Vibrations (79-DET-60) (A) **N 114**

**Tea Interactions**

Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) (A) **Ag 103**

**Tee-Joint Device**

The Flow Control Properties of a Specially Designed Tee-Joint (78-WA/DSC-5) (A) **Ap 94**

**Teizeria, A. A.** Conduction-Heating Considerations in Thermal Processing of Canned Foods (78-WA/HT-55) (A) **Mr 96**

**Telecommunications**

Hermes Bound: The Policy and Technology of Telecommunications (CB) **Je 103**

The Wired Society (CB) **Mr 98**

**Teleconferences**

Teleconferences, Electronic Mail in Future for Business (BTR) **Ap 50**

**Teleconferencing**

Teleconferencing Brings Diplomacy into the Space Age (NR) **Je 57**

**Telemetry**

Other Applications of Telemetry **Mr 34**

Telemetry for Turbomachinery **Mr 30**

**Telesensor Retrieval System (TRS)**

Workhorse of Space (BTR) **F 56**

**Telescope Systems**

Thermal Design for the Infrared Astronomical Satellite (IRAS) Telescope System (79-ENAS-38) (A) **O 90**

**Temperature**

The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**

**Temperature Calculations**

Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 96**

**Temperature Changes**

Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**

**Temperature Characteristics**

The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Jl 98**

**Temperature Control**

Application of Sulzer 12ASV 25/30 Diesel Engines to M-K TE70-4S Locomotives (78-DGP-15) (A) **Je 87**

Demonstration of Fuel Conservation in High Temperature Industrial Furnaces (78-WA/Ener-8) (A) **Je 92**

Energy-Saving Thermostat (ES) **F 24**

Laser-Particle Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Jl 102**

An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 96**

Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**

**Temperature Determination**

Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **Jl 103**

**Temperature Differences**

Ocean Thermal Plant (BTR) **Je 51**

**Temperature Distortions**

The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **Jl 103**

**Temperature Distribution**

Controlled Destruction and Temperature Distributions in Biological Tissues Subjected to Monoactive Electrocoagulation (78-WA/HT-66) (A) **Ap 93**

Mixed Forced and Free Convection on Inclined Surfaces (78-WA/HT-46) (A) **Ap 92**

Pressure Distribution from Experimental Data for Elastohy-

drodynamic Point Conjunctions (78-Lub-3) (A) **Je 93**

**Temperature Effects**

Cryogenics: Applications Unlimited (BTR) **Jl 50**

Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact (78-WA/Aero-2) (A) **Ap 100**

Soot and the Combined Cycle Boiler (79-GT-67) (A) **Jl 93**

Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Je 88**

**Temperature Environment**

A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Jl 103**

**Temperature Flows**

Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Jl 90**

**Temperature Gradients**

The Effect of Applied Temperature Gradients on the Convective Instability of a Volumetrically Heated Porous Bed (79-HT-30) (A) **O 94**

Thermal Characteristics of Hydroponic Growing Beds (78-WA/HT-53) (A) **Ap 92**

**Temperature Measurements**

Application of the Finite Element Method to the Nonlinear Inverse Heat Conduction Problem Using Beck's Second Method (78-WA/TM-1) (A) **F 131**

Determination of Heat Transfer Coefficients Around a Blade Surface from Temperature Measurements (79-GT-26) (A) **Jl 90**

Die Temperature During Production Drop Forging (78-WA/Prod-28) (A) **My 100**

Elements of a Bond Graph Simulation Language for Passive Solar Heating System Design (78-WA/Sol-14) (A) **Je 96**

Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**

Momentum and Temperature Balance Measurements in an Axisymmetric Turbulent Plume (79-HT-42) (A) **O 94**

Portable Infrared Thermometer (IF) **Je 54**

Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Je 94**

Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/TM-2) (A) **F 131**

**Temperature Prediction**

Predicting Temperatures in Flowing Oil Wells (78-Pet-9) (A) **Je 97**

**Temperature Probes**

Total Temperature Probe Calibration in Supersonic Rarefied Flows (78-WA/HT-1) (A) **Mr 93**

**Temperature Profiles**

Buoyancy Effects on Sodium Coolant Temperature Profiles Measured in an Electrically Heated Mock-up of a 61-ROD Breeder Reactor Blanket Assembly (78-WA/HT-25) (A) **Ap 91**

Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**

Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**

Temperature Profiles in Combustion Gases by Inversion: Review and Approach (79-HT-21) (A) **O 93**

**Temperature Properties**

Elevated Temperature Tensile Properties of Alloyed Steels Compared to ASME Design Stresses for Pressure Vessels (78-Pet-16) (A) **Je 98**

**Temperature Ranges**

Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Jl 90**

Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Jl 101**

A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**

Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Jl 97**

Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **Jl 104**

Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Jl 91**

Fireproof Corrosion of Austenitic Alloys at High Temperature in a Fluidized Bed Coal Combustor (79-GT-121) (A) **Jl 97**

Geothermal Energy (EN) **Jl 68**

A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Jl 102**

Methane Utilization (79-GT-139) (A) **J1 100**  
 New Sizing Agent Can Reduce Pollutants (EN) **J1 68**  
 New Variable Vane Two-Shaft Gas Turbine (BTR) **D 58**  
**Temperature Rate**  
 Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **J1 102**  
**Temperature Ratio**  
 Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 95**  
**Temperature Reduction**  
 NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **J1 92**  
**Temperature Region**  
 Effect of Composition of Melting Behavior on Coal Ash (78-WA/CD-2) (A) **Je 91**  
**Temperature Responsive Valve**  
 A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service (78-Pet-30) (A) **F 122**  
**Temperature Stability**  
 Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/TM-2) (A) **F 131**  
**Temperature Technology**  
 Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **J1 103**  
**Temperature Transients**  
 Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **J1 91**  
**Temperature Variations**  
 Geothermal Power and Water Production Studies at the University of California (78-WA/Enar-7) (A) **Je 93**  
 High-Temperature Coal Gasification (BTR) **J1 51**  
 Science of the Big Bend (BTR) **J1 46**  
 The Sticking Temperature and Adhesion Force of Slag Droplets from Four Coals on Mild Steel (78-WA/CD-1) (A) **Je 91**  
**Tempered Steels**  
 Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94**  
**Tempering Temperature**  
 Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/Prod-15) (A) **My 99**  
**Ten Eyck, R. L.** Locomotive Engine Life Support Systems (78-WA/RT-7) (A) **My 93**  
**Tensile Instability**  
 Strain Limits for Highly Irradiated Core Components (79-PVP-49) (A) **S 97**  
**Tension**  
 Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**  
 Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**  
**Tension-Roller-Levelling Process**  
 The Tension-Roller-Levelling Process—Elongation and Power Loss (78-WA/Prod-18) (A) **My 99**  
**Tension Variations**  
 High-Frequency Yarn Tension Variations in Spinning (79-Tex-6) (A) **D 100**  
**Tenter Frame Dryer Performance**  
 A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) **Ja 92**  
**Terminal Distribution**  
 A Numerical Solution Method for the Prediction of Flow and Terminal Distribution in Shell-and-Tube Heat Exchangers (79-HT-83) (A) **N 103**  
**Terrain Contours**  
 Earth Terrain Contouring by Satellite (BTR) **Mr 52**  
**Terranova, A.** Detection of Fatigue Crack Formation in Nozzle Welding of Pressure Vessels (79-PVP-101) (A) **S 101**  
**Termuehlen, H.** Variable-Pressure Operation and External Turbine Bypass Systems to Improve Power Plant Cycling Performance (79-JPGC-Pwr-9) (A) **D 98**  
**Terrestrial Photovoltaics**  
 Unique Aspects of Terrestrial Photovoltaic System Design (79-Sol-14) (A) **Ag 94**  
**Terrestrial Scientists' Handbook**  
 The Practising Scientist's Handbook: A Guide for Physical and Terrestrial Scientists and Engineers (CB) **F 134**  
**Tesar, D.** Economic Issues Associated With Machinery and Its Manufacturers (79-DET-52) (A) **N 114**; R&D Factors and a Proposed National Program for Me-

chanical Technology (79-DET-66) (A) **N 113**  
**Tessier, M. J.** High Temperature Testing of a Sodium Pump (78-WA/NE-12) (A) **Mr 89**  
**Test Demonstration**  
 Laser Balancing Demonstration on a High-Speed Flexible Rotor (79-GT-56) (A) **J1 92**  
**Test Facility**  
 1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**  
 Test Facility for Solar Collectors (ES) **Ja 19**  
**Test Facility Control**  
 FP-1—A Microcomputer Language for Controlling Hydraulic Systems (78-DE-W-1) (A) **F 128**  
**Test Machine**  
 Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) (A) **F 123**  
**Test Program**  
 Computer-Perfect Engines (BTR) **Je 54**  
**Test Program Report**  
 Report of a Test Program to Update Equipment Specifications and Design Criteria for Stoker-Fired Boilers (78-IPC/Fu-3) (A) **Ja 91**  
**Test Vessel**  
 Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**  
**Testing Facilities**  
 Design of Air-Cooled Jet Engine Testing Facilities (79-GT/ter-5) (A) **O 82**  
**Tevanwerk, J. L.** The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) (A) **Ja 94**  
**Textile Drying**  
 Textile Drying Using Solar Process Steam (79-Sol-23) (A) **Ag 95**  
**Textile Engineering**  
 Contact Drying of a Sheet of Moist Fibrous Material (79-Tex-2) (A) **D 99**  
 Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Tex-1) (A) **Ja 92**  
 The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**  
 Dust-Trap Removal by the SRCC Tuft-To-Yarn Processing System (78-Tex-2) (A) **Ja 92**  
 Electrical Simulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) (A) **Ja 93**  
 Fiber Migration and Characteristics in Open-End Spun Cotton-Rich Blended Yarn (79-Tex-7) (A) **D 100**  
 High-Frequency Yarn Tension Variations in Spinning (79-Tex-6) (A) **D 100**  
 Laser Doppler Anemometry at the Inlet of a Vertical Elutriator (79-Tex-9) (A) **D 100**  
 Mathematical Modelling of Textile Weave Room Sound Propagation (78-Tex-3) (A) **Ja 92**  
 Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) (A) **Ja 93**  
 Measurement of the Thermal Insulation Properties of Fabrics (79-Tex-3) (A) **D 99**  
 Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) (A) **Ja 92**  
 A Phase-Velocity Description of Aerodynamic and Electrostatic Transport of Cotton Fibers and Trash (79-Tex-1) (A) **D 99**  
 Revised Theory for the Quantitative Analysis of Fabric Hand (79-Tex-5) (A) **D 100**  
 A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) **Ja 92**  
 The Shallow Solar Pond: An Alternative Process Hot Water Generator (79-Tex-8) (A) **D 100**  
 Stabilization of Crimp in Bulked Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Ja 92**  
 Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Tex-5) (A) **Ja 92**  
 Textile Machinery Research 1948-1978 (78-Tex-8) (A) **Ja 92**  
 Twistless Yarns and Woven Fabrics Made Therefrom (79-Tex-4) (A) **D 99**  
**Textile Industry**  
 A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) (A) **Ja 92**  
**Textile Machinery**  
 Textile Industry Boasts New Processes, Products, and Energy Alternatives **D 84**

**Textile Machinery Research**  
 Textile Machinery Research 1948-1978 (78-Tex-8) (A) **Ja 92**  
**Textile Making Process**  
 New Sizing Agent Can Reduce Pollutants (EN) **J1 68**  
**Textile Materials**  
 The Development of Modern Ballistic Apparatus for the Evaluation of Textile Materials Under High-Speed Impact (78-Tex-10) (A) **Ja 93**  
**Textile Ring-Spinning Frames**  
 Noise Reduction on Textile Ring-Spinning Frames (79-DET-33) (A) **N 112**  
**Textile Weave Room Sound Propagation**  
 Mathematical Modelling of Textile Weave Room Sound Propagation (78-Tex-3) (A) **Ja 92**  
**Thackrey, J. D.** Recognizing the Capable (C) **My 47**  
**Thaller, H. J.** A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**; Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**  
**The, J. H. L.** The Stress-State in the Shear Zone During Steady-State Machining (78-WA/Prod-10) (A) **Je 90**  
**Theoretical Analysis**  
 Nonparallel Effects on the Stability of Jet Flows (78-WA/APM-16) (A) **My 104**  
 A Theoretical Analysis of Solar Collector/Storage Panels (78-WA/Sol-11) (A) **Ja 96**  
**Theoretical Determination**  
 Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) **Ja 93**  
**Theoretical Issues**  
 Discrete Parts Assembly Automation—An Overview (78-WA/DSC-11) (A) **Ap 94**  
**Theoretical Method**  
 An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**  
**Theoretical Models**  
 Attic Heat Loss and Conservation Policy (78-TS-5) (A) **F 129**  
 Failure of Inclined Boreholes (78-Pet-44) (A) **F 124**  
**Theoretical Research**  
 Theoretical and Experimental Research on Hydraulic Fracturing (78-Pet-49) (A) **F 125**  
**Theoretical Study**  
 Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**  
**Thermal Ablation**  
 Influence of Fiber Loading on Thermal Ablation of PTFE (79-ENAs-3) (A) **O 86**  
**Thermal Acoustic Oscillations**  
 A Stability Criterion for the Occurrence of Thermally Induced Oscillations in Steady Laminar Flow (79-HT-74) (A) **N 105**  
**Thermal Analysis**  
 Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) (A) **Mr 91**  
**Thermal Battery**  
 Small, Long-Lived Thermal Battery (BTR) **O 44**  
**Thermal Behavior**  
 An Analytical Solution for Thermal Behavior of the Step Thrust Bearing (79-Lub-19) (A) **D 104**  
**Thermal Boundary Condition**  
 An Investigation of Local Heat Transfer During Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/Prod-5) (A) **My 98**  
**Thermal Characteristics**  
 Thermal Characteristics of Hydroponic Growing Beds (78-WA/HT-53) (A) **Ap 92**  
**Thermal Conductivity**  
 Dielectric Constant of Water and Steam **S 44**  
 Heat Pulse Measurements of the Thermal Conductivity of a Highly Anisotropic Material—Solid Helium (78-WA/HT-12) (A) **Mr 94**  
**Thermal Comfort Zone**  
 Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**  
**Thermal Control Systems**  
 Evolutionary Possibilities of the Spacelab Thermal Control Systems Towards Space Stations (79-ENAs-11) (A) **O 87**  
 Orbital Service Module Thermal Control System Design (79-ENAs-22) (A) **O 88**

Thermal Control Systems for Pod-Mounted Avionics (79-ENAS-2) (A) **O 86**

**Thermal Convection**  
A Numerical Investigation of Thermal Convection in a Heat-Generating Fluid Layer (79-HT-103) (A) **N 106**  
Steady Thermal Convection from a Concentrated Source in a Porous Medium (79-HT-69) (A) **N 104**  
Three-Dimensional Thermal Convection Produced by Two-Dimensional Thermal Forcing (79-HT-109) (A) **N 106**

**Thermal Cracking**  
An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**

**Thermal Cycles**  
Thermal Cycle Loss Considerations for Power Plants Burning Very Low Rank Solid Fuels (79-JPGC-Pwr-4) (A) **D 97**

**Thermal Cycling**  
Experimental Study of Fatigue Crack Initiation Due to Rapid Thermal Cycling in Pressure Vessel Steels (79-PVP-109) (A) **S 102**

**Thermal Deformation**  
Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) (A) **Ja 94**

**Thermal Discharge**  
On the Horizontal Recirculation in Water Bodies Due to Thermal Discharge (79-HT-84) (A) **N 106**

**Thermal Efficiency**  
The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**  
Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Jl 97**

**Thermal Energy**  
A Comprehensive Energy Analysis Applied to and Ocean Thermal Energy Conversion System (78-TS-6) (A) **F 129**  
Design of a 150-kW Solar-Powered Irrigation Facility (78-WA/Sol-6) (A) **Je 95**  
GUD-AN Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Jl 98**  
Numerical Simulation of Dual-Media Thermal Energy Storage Systems (79-HT-35) (A) **O 94**  
Ocean Thermal Energy Conversion (EN) **O 84**  
Safing Away Energy (Ja 18)

**The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94****

**Thermal Energy Conversion**  
Development of Compact Heat Exchangers for Ocean Thermal Energy Conversion (OTEC) Systems (78-WA/HT-34) (A) **Ap 92**  
Nitro Heat Engines for Low-Grade Thermal Energy Conversion **My 28**

**Thermal Energy Power Plants**  
The Use of Heat Exchangers with Thermoexcel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**

**Thermal Energy Storage**  
Heat Exchanger Performance in Latent Heat Thermal Energy Storage (79-HT-17) (A) **O 92**  
Low-Temperature Thermal Energy Storage: A Survey (BTR) **N 59**

**Thermal Engine**  
Diesel Engine Progress (IF) **F 64**

**Thermal Fatigue Life**  
Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Jl 91**

**Thermal Gradient**  
... And So Is OTEC (ES) **Ja 18**

**Thermal-Hydraulics**  
Simple Fuel Pin Transient and Melting Model and Its Application to Thermal-Hydraulics in LMFBR Subassembly (78-WA/HT-26) (A) **Ap 91**

**Thermal Ignition Analysis**  
Thermal Ignition Analysis in Boundary Layer Flows (78-WA/HT-47) (A) **Ap 92**

**Thermal Influences**  
Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Jl 101**

**Thermal Insulation**  
Measurement of the Thermal Insulation Properties of Fabrics (79-Tex-3) (A) **D 99**

**Thermal Network Analysis**  
The Use of Power Series Solutions in Radiation Heat Transfer and Thermal Network Analysis (79-HT-65) (A) **N 104**

**Thermal Performance**  
The Analysis of Heat Transfer with and without Condensation in a Heat Pipe Heat Exchanger (78-WA/HT-59) (A) **Ap 92**  
Heat Transfer by a Corona Wind Heat Exchanger (78-WA/HT-43) (A) **Ap 92**  
Slag Transport Models for Radiant Heater of an MHD System (78-WA/HT-21) (A) **Ap 90**  
Solar Energy Concentrators (ES) **F 24**

**Thermal Performance Analysis**  
ASME Performance Test Codes and Their Relationship to Plant Testing and Thermal Performance Analysis **Ap 105**

**Thermal Phenomena**  
Thermal and Hydrodynamic Phenomena Associated with Melting of Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) (A) **Mr 96**

**Thermal Power**  
1-MW Calorimetric Receiver for Solar Thermal Test Facility (78-WA/Sol-7) (A) **Je 95**

**Thermal Power Stations**  
The Behavior of a Closed-Cycle Gas Turbine with Time Dependent Operating Conditions (79-GT-1tr-2) (A) **O 83**

**Thermal Power System**  
Structural Design of Superheater for a Central Solar Receiver (78-WA/PVP-1) (A) **My 95**

**Thermal Processing**  
Conduction-Heating Considerations in Thermal Processing of Canned Foods (78-WA/HT-55) (A) **Mr 96**

**Thermal Protective Covering**  
Use of a Radar Reflective and Thermal Protective Covering for Arctic Survival—Some Attributes of Heat Reflection Applied to the State of Thermal Equilibrium (78-Pet-14) (A) **Ja 98**

**Thermal Seal**  
Metallic Thermal Seal (BTR) **Jl 45**

**Thermal Sterilization**  
Heat Transfer and the Killing of Bacteria in Thermal Sterilization of Meat Rolls (78-WA/HT-56) (A) **Mr 97**

**Thermal Storage**  
Solar Collector Storage Panel (78-WA/Sol-12) (A) **Je 95**

**Thermal Storage Tanks**  
Expand Sun-Powered Irrigation (BTR) **Jl 45**

**Thermal Stratification**  
Performance of an Inlet Manifold for a Stratified Storage Tank (79-HT-67) (A) **N 104**

**Thermal Stress Evaluation**  
Thermal Stress Evaluation of Industrial Brake Drums Using Finite Element and Finite Difference Techniques (79-DE-20) (A) **Ag 103**

**Thermal-Structural Mission Analyses**  
Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**

**Thermal Systems**  
Application of Extremal Distributions in the Design of Thermal Systems (79-DET-5) (A) **N 109**

**Thermal Transient Analysis**  
Thermal Transient Analysis in Layered Pressure Vessels (79-PVP-13) (A) **Ag 104**

**Thermally Induced Cracks**  
Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) (A) **F 126**

**Thermic Controller**  
A Thermic Controller for a Thermic Diode Solar Panel (78-WA/Sol-9) (A) **Je 95**

**Thermic Diode Panels**  
Cooling Applications of Thermic Diode Panels (78-WA/Sol-10) (A) **Je 95**

**Thermionic Power Converters**  
Thermionic Power Converters Mechanical Systems (78-DET-74) (A) **Ja 89**  
Thermionic Power Converters for Solar Energy (78-DET-74) (A) **Ja 89**

**Thermo-Chemical Characteristics**  
Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Je 97**

**Thermocycle Cooling**  
Application of Energy Conservation Methods to Industrial Refrigeration Systems (78-IPC-Pwr-5) (A) **Ja 91**

**Thermodynamic Analysis**  
A Low-Cost, On-Site Performance Monitoring System

(79-GT-21) (A) **Je 99**

**Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93****

**Thermodynamic Properties**  
The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**

**Thermodynamics**  
Floating Dry Cooling, A Competitive Alternative to Evaporative Cooling in a Binary Cycle Geothermal Power Plant (78-WA/Ener-2) (A) **Je 92**  
Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems (78-WA/HT-63) (A) **Ap 93**

**Thermoelastic Behavior**  
Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and Its Effect on Thermal Deformation (78-WA/Prod-31) (A) **My 101**  
Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**

**Thermoelastic Effects**  
Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) (A) **Ja 94**

**Thermoelectrics**  
An Analysis of the Thermoelectric Problem in a Slab (79-HT-59) (A) **N 103**

**Thermoelectric Generators**  
Thermoelectric Generators for Solar Energy Conversions (78-Pet-75) (A) **F 127**

**Thermionuclear Power**  
World's Largest Laser (BTR) **Ja 43**

**Thermophoresis-Enhanced Deposition Rates**  
Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 88**

**Thermosyphons**  
Open Loop Thermosyphons with Geological Applications (79-HT-64) (A) **N 104**

**Thibodeaux, D. P.** Dust-Trash Removal by the SRRC Tuff-To-Yarn Processing System (78-Tex-2) (A) **Ja 92**

**Thick Stock Flow**  
Multivariable Identification of Some Paper Plant Parameters (78-WA/DSC-4) (A) **Ap 94**

**Thickness Variation**  
Natural Frequencies of Clamped Orthotropic Rectangular Plates With Varying Thickness (78-WA/APM-9) (A) **My 104**

**Thin Liquid Films**  
The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 89**

**Thiry, P.** Modeling of a Composite Prosthesis for Quasi-Cylindrical Ligaments (79-Bio-2) (A) **S 108**

**Thoen, T.** EPA Best Available Control Technology Requirements for Gas Plants and Related Facilities (78-Pet-16) (A) **Je 98**

**Thomas, A. G.** The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**

**Thomas, A. I.** Those Treacherous Continuous Pilots (78-Pet-45) (A) **F 124**

**Thomas, H. P.** Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) (A) **F 127**

**Thomas, J.** Dynamic Analysis of Rotating Asymmetric Cross-Section Blade Packet (79-DET-93) (A) **D 105**  
Finite Element Analysis of Rotating Pretwisted Asymmetric Cross-Section Blades (79-DET-95) (A) **D 105**  
Vibration Characteristics of Asymmetric Cross-Section Bladed Disk Under Rotation (79-DET-94) (A) **D 105**

**Thomas, J. F.** Use of Phytotrons in Assessing Environmental Requirements for Plants in Space Habitats (79-ENAS-28) (A) **O 89**

**Thomas, T. R.** Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) (A) **Ja 94**

**Thompson, B. S.** The Analysis of an Elastic Four-Bar Linkage on a Vibrating Foundation Using a Variational Method (79-DET-64) (A) **N 114**

**Thompson, D. S.** The LLL Underground Coal Gasification Project: 1978 Status (79-PVP-93) (A) **S 100**

**Thompson, G. H.** The CH-46 Rotor Blade Transition from Metal to Composite Materials (78-WA/Aero-9) (A) **Ap 101**

**Thompson, M.** Solving Three Dimensional Stress Analysis



- Problems by a Surface Representation Along (78-Pet-77) (A) **F 127**
- Thompson, R. E.** Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) (A) **Ja 97**
- Thompson, R. G.** Performance Correlations for Flat and Conical Diffusers (79-GT-52) (A) **Jl 91**
- Thoms, R. L.** A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt (78-Pet-79) (A) **F 128**
- Thomson, E. A.** A Passive Graphics Program for General Finite Element Analyses (79-PVP-20) (A) **Ag 105**
- Thorness, C. B.** The LLL Underground Coal Gasification Project: 1978 Status (79-PVP-93) (A) **S 100**
- Thorsteinsson, Y.** Drillhole Stimulation in Iceland (78-Pet-24) (A) **Ja 98**
- Three-Dimensional Flow**  
An Analysis of Three-Dimensional Flow in a Centrifugal Compressor Impeller (79-GT/Int-13) (A) **O 83**
- Three-Dimensional Lifting-Surface Theory for an Annular Blade Row** (79-GT-182) (A) **Jl 103**
- Three-Dimensional Flow Field**  
Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **Ja 100**
- Three-Dimensional Logging**  
Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 98**
- Three-Dimensional Stress Analysis**  
Solving Three Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) (A) **F 127**
- Three Mile Island**  
Odyssey of an "Event": Ordeal at Three Mile Island (NR) **Ja 80**
- Three-Workpiece Lapping Process**  
Construction of Three-Workpiece Lapping Process (78-WA/Prod-7) (A) **Ja 90**
- Throttling Valve**  
Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **Mr 99**
- Thrust Bearings**  
Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) (A) **Ja 95**
- Thrust Carrying Bearing Design**  
A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) (A) **Ja 96**
- Thrust Engines**  
Augmented Vectored Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Ja 99**
- Thruster System**  
Reaction Control System Thrusters for Space Shuttle Orbiter (78-WA/Aero-17) (A) **Ap 101**
- Thurston, G. A.** Roots of Lambda Matrices (78-WA/APM-4) (A) **My 102**
- Tibia**  
Relative Motion of the Tibia with Respect to the Foot During Internal-External Rotation of a Human Ankle (79-Bio-4) (A) **S 108**
- Tichy, J. A.** An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) (A) **Ja 93**; An Analytical Solution for Thermal Behavior of the Step Thrust Bearing (79-Lub-19) (A) **D 104**
- Tidal Power**  
Wave and Tidal Power (F) **Ja 58**
- Tielking, J. T.** Axisymmetric Bending of Annular Plates (78-WA/APM-27) (A) **Ja 93**
- Tiffany, C. F.** Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 90**
- Tillotte, Z. P.** Application of Recuperative Gas Cycles with a Bypass Heat Generator to Solar Energy Power Plants (79-GT-89) (A) **Jl 95**; Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator-Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Jl 97**
- Tilting-Pad Thrust Bearings**  
Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) (A) **Ja 95**
- Time Correlations**  
Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Jl 104**
- Time-Dependent Inputs**  
Long-Time Solutions to Heat-Conduction Transients with Time-Dependent Inputs (79-HT-66) (A) **N 104**
- Time Domain Analysis**  
Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**
- Time Domain Analysis of Machinery Vibration Signals Using Digital Techniques** (79-DET-13) (A) **N 110**
- Time Sharing**  
A High-Speed Time Sharing Rotary Switch (78-WA/DE-20) (A) **Mr 86**
- Time-Varying Stiffness**  
The Application of the Ritz Averaging Method to Determining the Response of Systems with Time Varying Stiffness to Harmonic Excitation (79-DET-20) (A) **N 110**
- Normal Mode Uncoupling of Systems With Time Varying Stiffness** (79-DET-19) (A) **N 110**
- Ting, L. L.** Development of a Laser Fluorescence Technique For Measuring Piston Ring Oil Film Thickness (79-Lub-2) (A) **D 102**
- Ting, T. C. T.** A Theory of Viscoelastic Analogy for Wave Propagation Normal to the Layering of a Layered Medium (79-APM-24) (A) **S 107**
- Tippett, J. R.** Efficiency and Amplification in Jet Pumps (78-WA/DSC-7) (A) **Ap 94**; The Flow Control Properties of a Specially Designed Tee-Joint (78-WA/DSC-5) (A) **Ap 94**
- Tirosh, J.** Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/Prod-1) (A) **My 98**
- Tishkoff, J. M.** Turbulent Co-Current Gas-Liquid Flow in a Tube with and without Swirl (79-FE-11) (A) **O 85**
- Tison, J. D.** Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 99**
- Titanium**  
Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/Prod-12) (A) **Ja 90**
- Tjonneland, E.** Application of Viscous Analysis to the Design of Jet Exhaust Powered Lift Installations (79-GT/Int-15) (A) **O 84**
- Tielma, B. W.** Baseline Data on Film Coefficient for Heating Isobutane Inside a Tube at 4.14 MPa (600 psia) (79-HT-14) (A) **O 92**; Geothermal Power and Water Production Studies at the University of California (79-WA/Ener-7) (A) **Ja 93**
- Tobias, S. A.** Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**
- Tobin, R. J. (author)** The Social Gamble: Determining Acceptable Levels of Air Quality (CB) **S 111**
- Tobin, T. H., Jr.** Signature Analysis for Mechanical Systems via Dynamic Data System (DDS) Monitoring Technique (79-DET-10) (A) **N 110**
- Toda, A.** Planet Indexing in Planetary Gears for Minimum Vibration (79-DET-73) (A) **N 116**
- Todreas, N. E.** Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) (A) **O 94**
- Toel, R.** Mechanism of Freeze-Drying of Porous Bodies by Conductive Heat Transfer (79-HT-86) (A) **N 106**
- Tokar, J. V.** Experimental Study of the Transition from Forced to Natural Circulation in EBR-II at Low Power and Flow (79-HT-10) (A) **O 92**
- Tolle, G. C.** An Approximate Method for the Determination of the Response Frequency of Pipe Whip (79-PVP-123) (A) **S 104**
- Tomasson, J.** Drillhole Stimulation in Iceland (78-Pet-24) (A) **Ja 98**
- Tomback, H.** A Pragmatic Approach to the Engineers Involvement in Public Policy Making (78-WA/TS-1) (A) **Ja 94**
- Tomita, N.** Development of a Very High Temperature Steam Heater (78-WA/HT-2) (A) **Mr 92**
- Tomizuka, M.** Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) **Ap 98**; An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) (A) **Ap 98**; A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**
- Tonder, K.** Micropolarity—Roughness Interaction in Hydrodynamic Lubrication (79-Lub-8) (A) **D 102**
- Toot, J. L.** The Modeling of NO Generation from Coal-Derived Liquids in Combustion Turbines (79-JPGC-GT-4) (A) **D 98**
- Tool Deformation**  
Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/Prod-30) (A) **My 101**
- Tool Industry**  
Machine Tools Look Healthy (NB) **D 75**
- Tool Life Scatter**  
Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**
- Tool Life Study**  
On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/Prod-23) (A) **My 100**
- Tool-Life Tests**  
Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/Prod-15) (A) **My 99**
- Tool Lives**  
Application of Dynamic Programming to Optimize Tool Replacement Schedules for Multi-Tool Operations Involving Distributed Tool Lives (79-DET-4) (A) **N 109**
- Tool Measurements**  
The Optimization of Machine Tool Parameters by Direct Measurement (79-DET-102) (A) **D 105**
- Tool Models**  
An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**
- Tool Post Dynamometer**  
Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**
- Tool Reliability**  
Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Ja 90**
- Tool Replacement**  
Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/Prod-8) (A) **My 102**
- Tool Wear**  
Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**
- Tools**  
Development of Deviation Control Tool (78-Pet-58) (A) **F 126**
- Toridis, T. G.** Static and Dynamic Analysis of Space Frameworks with Curved Members (78-PVP-97) (A) **S 101**
- Toril, T.** The Use of Heat Exchangers with Thermoexcel Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**
- Torisaki, Y.** Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Jl 98**
- Torpherical Shells**  
Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) (A) **S 97**
- Toroidal Pressure Vessels**  
Design of Ellipsoidal and Toroidal Pressure Vessels to Probabilistic Criteria (79-DET-110) (A) **D 106**
- Torpedo Propulsion Systems**  
Torpedo Propulsion Systems (78-WA/Aero-13) (A) **Ap 101**
- Torque**  
Dynamic Analysis of Steering Forces in Belt Conveyors (78-WA/MT-3) **My 98**
- The Dynamics of Rotor-Bearing Systems with Axial Torque—A Finite Element Approach** (79-DET-68) (A) **N 115**
- Torque Characteristics**  
Starting Torque Characteristics of Small Aircraft Gas Turbines and APU's (79-GT-95) (A) **Jl 96**
- Torque Equation**  
Dimensional Integrity (C) **Jl 99**
- Torquewhirl Analysis**  
A Torquewhirl Analysis of the Space Shuttle Main Engine High Pressure Turbopumps (79-DET-76) (A) **N 116**
- Torrance, K. E.** Open Loop Thermosyphons with Geological Applications (79-HT-64) (A) **N 104**
- Torsion**  
Concerning a Creep Surface Derived From a Multiple Integral Representation for 304 Stainless Steel Under Combined Tension and Torsion (78-WA/APM-11) (A) **My 103**
- A Probabilistic Model of Size Effect in the Fatigue Strength of Rounds in Bending and Torsion** (79-DE-16) (A) **Ag 103**
- A Technical Theory of Dynamical Torsion for Beams of any Cross-Section Shapes** (79-DET-59) (A) **N 114**
- Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion** (79-PVP-6) (A) **Ag 103**
- Torsion Spring Design**  
A Generalized Torsion Spring Design Method (78-DET-62) (A) **Ja 90**



### **Torsion Springs**

Helical Torsion Spring Design **Ag 30**

### **Torsional Analysis**

Computerized Time Transient Torsional Analysis of Power Trains (79-DET-74) (A) **N 116**

### **Torsional Load Displacement**

Effect of Fixed Axes of Rotation on the Varus-Vagus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**

### **Total Energy Projects**

Mississippi County Community College Solar Photovoltaic Total Energy Project (79-Sol-13) (A) **Ag 94**

### **Toughness Measurements**

Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 163**

### **Tower Supports**

Collapse Mode Extends Tenfold in Height (BTR) **F 80**

**Towmes, H. W.** Experimental Measurements and Correlations of Nusselt Number for MHD High Temperature Air Preheaters (78-WA/HT-22) (A) **Mr 94**

### **Townhouses**

Ottawa Townhouses Heated by Solar Energy (BTR) **N 84**

**Townsend, M. A.** Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) (A) **Mr 84**, Optimal Control Concepts for the Characterization and Design of Highway Vehicle-Trailer Systems (78-WA/DSC-27) (A) **Ag 96**

### **Trace Element Emissions**

Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) (A) **Je 97**

### **Track Surface**

Locomotive Response to Random Track Surface Irregularities (78-WA/RT-12) (A) **My 93**

### **Tracking Errors**

Efficiency Degradation Due to Tracking Errors for Point Focusing Solar Collectors (78-WA/Sol-4) (A) **Je 94**

### **Tracking Station**

The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**

### **Traction Applications**

Compact Diesel Engines in Traction Applications (78-DGP-8) (A) **Je 87**

### **Traction Drives**

The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) (A) **Je 94**

New Traction Drive Could Replace Gears (BTR) **N 66**

Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Je 94**

### **Tractor Design**

Power Trains for Tractors **Ap 40**

### **Tractor-Trailers**

New Design Concepts in Safety of Tractor-Trailers (78-DET-83) (A) **Je 90**

### **Traffic Safety**

Highway Hazards (NB) **O 66**

### **Train Operations Simulator (TOS)**

The Train Operations Simulator (TOS)—A Tool for Railroad Accident Investigation (78-WA/RT-3) (A) **My 92**

### **Training Aid**

Microprocessor Training Aid (BTR) **My 53**

### **Training Experience**

Evaluation of Industrial Boiler Operator Training Experience (79-IPC-Pwr-5) (A) **D 101**

### **Training Program**

Steam Plant Operator Training (79-IPC-Pwr-4) (A) **D 101**

### **Trains**

Conventional Versus Self-Steering Radial Trucks for High-Speed Passenger Trains (79-RT-3) (A) **Ag 95**

### **Trans-Alaska Pipeline**

Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) (A) **F 127**

### **Transducers**

"Blind" Position Indicator (BTR) **Jl 40**

Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**

Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Jl 91**

### **Transfer Line Machines**

Higher Efficiency Transfer Line Machines (BTR) **Je 43**

### **Transfer Matrices**

The Use of Transfer Matrices for the Static Analysis of Marine Pipelines During Steady-State Laying Conditions (78-Pet-40) (A) **F 123**

### **Transfer Matrix Method**

Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**

### **Transfer Model**

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Je 96**

### **Transformer Efficiency**

Improved Transformer Efficiency (ES) **O 19**

### **Transient Analysis**

Simple Fuel Pin Transient and Melting Model and its Application to Thermal-Hydraulics in LMFBR Susassembly (78-WA/HT-26) (A) **Ap 91**

### **Transient Asymmetric Heating**

Experimental Investigation of Transient Asymmetric Heating in Vertical and Inclined Rectangular Enclosure (79-HT-90) (A) **N 106**

### **Transient Heat Conduction**

Spectral Methods for Transient Heat Conduction Problems in Simple Geometries (79-HT-61) (A) **N 104**

### **Transient Loads**

Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**

### **Transient Natural Convection**

Finite Element Analysis of Transient Natural Convection in Enclosed Spaces (79-HT-49) (A) **N 102**

### **Transient Response**

Simulation of a Turbocharged Diesel Engine to Predict the Transient Response (78-DGP-11) (A) **Je 87**

Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**

### **Transient Stress**

Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**

### **Transient Techniques**

Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Jl 90**

### **Transient Temperature Measurement**

Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Jl 102**

### **Transient Temperatures**

Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 98**

### **Transit Development**

Progress in Railway Mechanical Engineering—1977-78 Report of Survey Committee—Cars and Equipment (78-WA/RT-14) (A) **My 93**

### **Transit Systems**

Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 89**

Optimal Control of On-Board and Station Flywheel Storage for Rail Transit Systems (78-WA/DSC-32) (A) **Ap 99**

Transit System Safety Analysis (IF) **My 59**

### **Transit Vehicles**

Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) (A) **Ap 99**

Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) **Ap 94**

### **Transition Boiling**

Transition Boiling Heat Transfer in a Vertical Round Tube (79-HT-47) (A) **N 102**

### **Transition Measurements**

Some Observations on the Relationship Between Lubricant Mechanical and Dielectric Transitions Under Pressure (79-Lub-16) (A) **D 103**

### **Transition Procedure**

Transition Procedure of Stationary Boundary Layers (79-GT-128) (A) **Jl 98**

### **Transmission Operating Points**

Performance Prediction for an Axial Hydraulic Transmission (78-WA/OCE-5) (A) **F 130**

### **Transmission Pipelines**

Basis of Structural Design Criteria for Buried Gas Transmission Pipelines (78-Pet-73) (A) **F 127**

### **Transmission Systems**

Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) (A) **Je 90**

### **Transmissions**

Computer-Designed Gearing **Je 32**

A New Speed Reducer Design Technique **S 32**

### **Transmitting Rotary Motion**

Transmitting Rotary Motion at an Angle (BTR) **Jl 47**

### **Transonic Axial Fan Rotors**

An Off-Design Correlation of Part Span Damper Losses Through Transonic Axial Fan Rotors (79-GT-6) (A) **Je 98**

### **Transonic Compressors**

Use of the Characteristic Method for the Prediction of the Three-Dimensional Flow Field in High Transonic Compressors (79-GT-34) (A) **Je 100**

### **Transonic Turbine Cascades**

The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Jl 98**

Investigations of Transonic Turbine Cascade with High Stagger and Low Solidity (79-GT-25) (A) **Je 100**

Shock Boundary Layer Interaction on High Turning Transonic Turbine Cascades (79-GT-37) (A) **Ag 98**

### **Transport Requirements**

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) (A) **F 128**

### **Transport System**

Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) (A) **My 98**

### **Transportation**

Coming: New Coal Transportation Modes **S 38**

Energy Problems and Urban and Suburban Transport (CB) **Ap 104**

Transportation Energy Trends (BTR) **Jl 41**

### **Transportation Methods**

Rails Still Ail (NR) **Jl 61**

### **Transportation Systems**

Automated Highway (BTR) **O 45**

Coal Transportation: Belt Conveyors, Combined Rail-Barge, and Slurry Pipelines (78-WA/MH-1) (A) **My 97**

Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**

Flywheel Buses (ES) **N 33**

Rail-to-Barge Transportation of Coal (78-WA/MH-6) (A) **My 98**

TankTrain®—A High Volume Bulk Liquid Transportation System (78-WA/RT-9) **My 93**

### **Transverse Injection**

Comparison of Transverse Injection Effects in Annular and in Straight Turbine Cascades (79-GT-17) (A) **Je 99**

Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-18) (A) **Je 99**

### **Transverse Stream**

Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (78-WA/FE-2) (A) **Je 88**

### **Transverse Stresses**

Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**

### **Transverse Valve**

The Vibrational Behavior of a Turbine Rotor Containing a Transverse Valve (79-DET-67) (A) **N 115**

### **Transverse Vibrations**

The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**

Transverse Vibrations of Clamped Rectangular Plates of Generalized Orthotropy Subjected to In-Plane Forces (79-DET-16) (A) **N 110**

**Trayser, D. A.** Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labacle Field Trial (78-WA/Fu-10) (A) **Je 97**

**Treager, I. E. (author)** Aircraft Gas Turbine Engine Technology (CB) **Je 104**

### **Treating Packers**

Hydraulically Actuated Treating Packers for Dry Rock Geothermal Applications (79-PVP-23) (A) **Ag 105**

**Tremblay, G. M.** Functional Characterization of Canine Anterior Cruciate Ligaments (79-Bio-1) (A) **S 108**

**Trezek, G. J.** Thermal Characteristics of Hydroponic Growing Beds (78-WA/HT-53) (A) **Ap 92**

### **TRI-SEN M-300 Electronic Governor**

A Discussion of the TRI-SEN M-300 Electronic Governor and its Possible Impact on Energy (78-DGP-22) (A) **Je 88**

### **Triangular Enclosures**

The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) (A) **Mr 93**

### **Triangular Fins**

Triangular Fin Performance by the Heat Balance Integral Method (78-WA/HT-50) (A) **Mr 96**

### Triangular Penetration Patterns

Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) (A) **Ag 106**

### Tribology

An Attempt to Provide a Unified Treatment of Tribology Through Load Carrying Capacity, Transport and Continuum Mechanics (79-Lub-18) (A) **D 103**

Tribology Symposium in France (NR) **Ji 66**

Troha, W. A. Engine Life Usage Experience of YF17/YJ101 Flight and Ground Testing (78-WA/GT-11) (A) **Ap 99**

### Trombe Wall Solar Collectors

On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**

### Truck Development

The Aluisse Truck (78-WA/RT-15) (A) **My 93**

### Truck Hunting

Analysis of Nonlinear Hunting Vibrations of Rail Vehicle Trucks (79-DET-25) (A) **N 111**

Tyris, J. Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**

### True Cutting Signal

Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**

### Truncation Methods

Stationary Response of a Randomly Parametric Excited Nonlinear System (78-WA/APM-13) (A) **My 103**

### Trunnions

Extension of the Transfer Matrix Method for Rotodynamic Analysis to Include a Direct Representation of Conical Sections and Trunnions (79-DET-58) (A) **N 115**

Trupp, A. C. Laminar Free Convection in Vertical Air-Filled Cavities with Mixed Boundary Conditions (79-HT-110) (A) **N 108**

### Truss Structures

Reliability Analysis of Truss Structures by Using Matrix Method (79-DET-113) (A) **D 106**

Tsahalis, D. T. The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) (A) **S 108**

Tsai, W. D. A Mathematical Model for Drill Point Design and Grinding (78-WA/Prod-35) (A) **My 101**

Tsang, M. M. On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/Prod-23) (A) **My 100**

Tsou, F. K. Friction and Heat Transfer in Turbulent Free Swirling Flow in Pipes (79-HT-39) (A) **O 94**

Tsuchiya, K. Transient Stress Produced in Internal Suspension Springs of Hermetic Refrigeration Compressor during Start and Stop Operations (79-DET-47) (A) **N 114**

Tsukikawa, T. Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/2Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

Tuan, Phan Dang Analysis of Anisotropic Sandwich Plates Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) **Ap 100**

### Tube Alloys

Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**

### Tube Spacing

On the Optimal Tube Spacing For Shell-and-Tube Gas Turbine Recuperators (79-GT-49) (A) **Je 101**

### Tubes

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**

Baseline Data on Film Coefficient for Heating Isobutane Inside a Tube at 4.14 MPa (600 psia) (79-HT-14) (A) **O 92**

Contact Conductance Between Parallel Tubes (79-HT-85) (A) **N 106**

Cooling Air in Turbulent Flow with Multi-Passage Internally Finned Tubes (78-WA/HT-52) (A) **Mr 98**

The Dynamics of Thin Liquid Films in Rotating Tubes: Approximate Analysis (78-WA/FE-9) (A) **Je 99**

The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**

An Experimental Study of Transition and Turbulent Natural Convection in a Vertical Open-Ended Tube (79-HT-37) (A) **O 95**

Failure Analysis of Tubes with Wastages (79-PVP-113) (A) **S 103**

Heat Removal Characteristics of Volume-Heated Boiling Pools with Inclined Boundaries in Bubbly Flow Regime (79-HT-99) (A) **N 107**

Heat Transfer Mechanisms Near Horizontal Heat Exchange Tubes in an Air Fluidized Bed of Uniformly Sized Glass Particles (79-HT-88) (A) **N 106**

A High Reliability Straight Tube LMFBFR Steam Generator Design (79-NE-4) (A) **S 104**

Investigation of the Heat Transfer in Cylindrical Receiver Configurations with Inner Tubes (79-GT-64) (A) **Ji 93**

Local Heat Transfer Coefficients Around Horizontal Tubes in Fluidized Beds (79-HT-75) (A) **N 105**

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**

Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Je 94**

Optimum Internal Finning for Fluidized Bed Coal Combustor Cooling Tubes (79-GT-148) (A) **Ji 99**

Resonance in the Ranque-Hilsch Vortex Tube (79-HT-16) (A) **O 93**

Seamless Tubes Factory: Computer Simulation for Design and Management (78-WA/Prod-37) (A) **My 102**

Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**

Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) **Mr 94**

Turbulent Co-Current Gas-Liquid Flow in a Tube with and without Swirl (79-FF-11) (A) **O 85**

### Tubing

The Use of Heat Exchangers with Thermoexcel's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**

### Tuft-To-Yarn Processing System

Dust-Trap Removal by the SRCC Tuft-To-Yarn Processing System (78-Tex-2) (A) **Ja 92**

### Tuning Fork System

Generating Ductile Iron Fatigue Data with a Calibrated Tuning Fork System (79-DE-11) (A) **Ag 102**

### Tunnels

Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 99**

### Turbidity

Compact Turbidity Meter (BTR) **Ag 49**

### Turbine Blade Cascade

An Experimental Study of Endwall and Airfoil Surface Heat Transfer in a Large-Scale Turbine Blade Cascade (79-GT-99) (A) **Ji 95**

### Turbine Blades

Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**

Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Ji 90**

Measurements of Heat Transfer in Circular, Rectangular and Triangular Ducts, Representing Typical Turbine Blade Internal Cooling Passages Using Transient Techniques (79-GT-40) (A) **Ag 98**

Thermal-Structural Mission Analyses of Air-Cooled Gas Turbine Blades (79-GT-19) (A) **Je 99**

### Turbine Bypass Systems

Variable-Pressure Operation and External Turbine Bypass Systems to Improve Power Plant Cycling Performance (79-JPGC-Pwr-9) (A) **D 98**

### Turbine Cascades

Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part II—Stability and Flutter Boundaries (79-GT-112) (A) **Ji 97**

The Base Pressure Problem in Transonic Turbine Cascades (79-GT-120) (A) **Ji 98**

Experimental Study of the Iso-Heat-Transfer-Rate Lines on the End-Wall of a Turbine Cascade (79-GT-20) (A) **Je 99**

Investigations of Transonic Turbine Cascade with High Stagger and Low Solidity (79-GT-25) (A) **Je 100**

Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 98**

Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-8) (A) **Je 99**

### Turbine Casings

Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**

### Turbine Catalytic Combustor

Alternate Fuels and the Gas Turbine Catalytic Combustor (79-GT-142) (A) **Ji 100**

### Turbine Combustion Chamber

Ongoing Development of a Low Emission Industrial Gas Turbine Combustion Chamber (79-GT-203) (A) **Ji 104**

### Turbine Combustor

The Modeling of NO Generation from Coal-Derived Liquids in Combustion Turbines (79-JPGC-GT-4) (A) **D 98**

Preliminary Design Analysis of a Catalytic Ceramic Structure in a Turbine Combustor (78-WA/GT-10) **Ap 89**

### Turbine Component

Improving Turbine Component Efficient (79-GT-176) (A) **Ji 102**

### Turbine Design Changes

Heavy Duty Gas Turbine Design Changes for Use with Low Btu Coal Gas (79-GT-198) (A) **Ji 104**

### Turbine Disks

The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Je 100**

An Engineering Approach to Cumulative Damage Fracture Mechanics in Gas Turbine Disks (79-GT-134) (A) **Ji 99**

### Turbine Engine Applications

Screening Properties of Silicon-Based Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**

### Turbine Engines

Ceramic Applications in Turbine Engines (79-GT-75) (A) **Ji 94**

The Combustion of a Range of Distillate Fuels in Small Gas Turbine Engines (79-GT-175) (A) **Ji 102**

A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **Ji 103**

A Double Acting Variable Geometry Combustor (79-GT-197) (A) **Ji 104**

High-Freezing-Point Fuels Used for Aviation Turbine Engines (79-GT-141) (A) **Ag 100**

Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**

Optimal Control of Turbine Engines (78-WA/DSC-33) (A) **Ap 99**

Physical Characterization of Particulate Materials from a Turbine Engine (79-GT-179) (A) **Ji 102**

Progress on the ENSIP Approach to Improved Structural Integrity in Gas Turbine Engines/An Overview (78-WA/GT-13) (A) **Ap 90**

### Turbine Erosion

Assessment of Hot Gas Cleanup Systems and Turbine Erosion/Corrosion Problems in PFBC Combined Cycle Systems (79-GT-195) (A) **Ji 104**

### Turbine Flames

Radiative Heat Transfer from Gas Turbine Flames (79-GT-144) (A) **Ji 101**

### Turbine Flow Path

A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Ener-3) (A) **Je 92**

### Turbine Gas Path Sealing

Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-6) (A) **Ap 89**

### Turbine Generators

Major Considerations in the Design and Engineering of Cogeneration Facilities (79-GT-151) (A) **Ji 90**

### Turbine Inlet Development Program

Status of Marine Gas Turbine Inlet Development Program (79-GT-147) (A) **Ji 100**

### Turbine Installation

Gas Turbine Installation in Naviplane N500 (79-GT-29) (A) **Ji 90**

### Turbine Material

Iterative Development of Injection Molded Sintered Alpha SiC Turbine Material (79-GT-77) (A) **Ji 94**

### Turbine Noise

Low Frequency Gas Turbine Noise (79-GT-196) (A) **Ji 104**

### Turbine Particulate Emissions

Control of Combustion Turbine Particulate Emissions Verified by Improved Measurement Technology (79-GT-189) (A) **Ji 104**

### Turbine Plants

Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation

(79-GT-190) (A) **Ji 103**

**Turbine Power Plants**  
Environmental Assessment of Advanced Open Cycle Gas Turbine Power Plants (79-GT-187) (A) **Ji 103**

**Turbine Regenerators**  
Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-159) (A) **Ji 104**

**Turbine Rotor-Blade**  
An Experimental Investigation of Film Cooling on a Turbine Rotor Blade (79-GT-32) (A) **Ag 97**

**Turbine Rotors**  
Multipurpose Wind Energy System (BTR) **S 59**  
The Vibrational Behavior of a Turbine Rotor Containing a Transverse Valve (79-DET-67) (A) **N 115**

**Turbine Systems**  
The Application of Indirectly Fired Open Cycle Gas Turbine Systems Utilizing Atmospheric Pressure Fluidized Bed Combustors to Industrial Cogeneration Situations (79-GT-16) (A) **Je 100**

**Turbine Transients**  
Thermal Influences in Gas Turbine Transients—Effects of Changes in Compressor Characteristics (79-GT-143) (A) **Ji 101**

**Turbine Utility Application**  
Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**

**Turbine-Vane Passage**  
Study of Mean- and Turbulent-Velocity Fields in a Large-Scale Turbine-Vane Passage (79-GT-33) (A) **Je 100**

**Turbine Vanes**  
An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Je 100**  
Forgings Replace Castings on Larger Turbine Vanes (BTR) **Mr 51**

**Turbines**  
Aircraft Gas Turbine Engine Technology (CB) **Je 104**  
Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Je 95**  
Application of All-Ceramic Nozzle to Radial Flow Turbine (79-GT-96) (A) **Ag 98**  
Application of Gas Turbine/Compressors in LNG Plants (79-GT-85) (A) **Ji 95**  
Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Ji 90**  
Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Ji 101**  
An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Ji 91**  
Benefits of Solar/Fossil Hybrid Gas Turbine Systems (79-GT-38) (A) **Ji 91**  
Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Ji 104**  
The Combined Reheat Gas Turbine/Steam Turbine Cycle Part I—A Critical Analysis of The Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-7) (A) **Je 98**  
Part II—The LM 5000 Gas Generator Applied to the Combined Reheat Gas Turbine/Steam Turbine Cycle (79-GT-8) (A) **Je 98**  
A Compact Closed Cycle Gas Turbine for Marine Propulsion (79-GT-82) (A) **Ji 92**  
Conceptual Design of a Solar Powered Closed-Cycle Gas Turbine Electric Power Generation System (79-GT-43) (A) **Ji 91**  
Conceptual Examination of Gas Phase Particulate Formation in Gas Turbine Combustors (79-GT/tar-12) (A) **O 83**  
Core Design Considerations for a Large Gas Turbine HTGR (79-GT-117) (A) **Ji 97**  
The Co-Turboshaft—A Novel Gas Turbine Power Plant for Heavy Equipment (79-GT-132) (A) **Ji 98**  
Dependence of Soot Production on Fuel Blend Characteristics and Combustion Conditions (79-GT-155) (A) **Ji 100**  
Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Ji 94**  
Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Ji 93**  
Development of a Ceramic Heat Exchanger for a Closed-Cycle Gas Turbine Engine (79-GT-59) (A) **Ji 92**  
Development of an Industrial Gas Turbine Combustor Burning a Variety of Coal-Derived Low Btu Fuels and Distillate (79-GT-1u2) (A) **Ji 102**

Development of Liquid Fuel System for Extended Operation of Industrial Gas Turbines (78-Pet-4) (A) **Je 97**  
The Development of the Olympus "C" Gas Generator (79-GT-122) (A) **Ji 97**  
Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery Systems (78-Pet-3) (A) **Je 97**  
The Effect of Environment Regulations on the General Electric Research and Development Program for Combustion Turbines Using Coal-Derived Fuels (79-GT-41) (A) **Ji 91**  
Effect of Rotor Tip Clearance and Configuration on Overall Performance of a 12.77-cm Tip Diameter Axial-Flow Turbine (79-GT-42) (A) **Ji 91**  
The Effect of a Sample Lot of Fuel Injectors on Emissions Levels of a Small Gas Turbine (79-GT-165) (A) **Ji 101**  
Effects of the Combustion Products of Coal-Derived Fuels on Gas Turbine Hot-Stage Hardware (79-GT-160) (A) **Ji 101**  
The Effects of LBG Composition and Combustor Characteristics on Fuel NO<sub>x</sub> Formation (79-GT-185) (A) **Ji 103**  
An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Ji 94**  
Energy Conversion by Means of MHD Shock-Wave Generators Combined with Closed-Cycle Gas Turbines (79-GT-54) (A) **Ji 91**  
Feasibility of an Isolated Reverse Turbine Concept for Marine Propulsion (79-GT-63) (A) **Ji 93**  
Field Testing and Modifications of Pipeline Compression Equipment (79-GT-82) (A) **Ji 95**  
Fuel Effects in Recent Combustion Turbine Burner Tests of Six Coal Liquids (79-GT-137) (A) **Ji 99**  
GUD-An Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Ji 98**  
A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Ji 102**  
Hopes for the Auto Turbine (ES) **O 18**  
Improvement of Nozzle Life in Gas Turbines (79-GT-50) (A) **Ji 91**  
Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **Ji 100**  
Industrial Type Gas Turbines for Offshore Applications (79-GT-105) (A) **Ji 96**  
Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) (A) **Ap 88**  
Internal Aerodynamics and Heat Transfer Problems Associated with Film Cooling of Gas Turbines (79-GT-57) (A) **Ji 93**  
Laser-Particulate Control for Open-Cycle, Coal Fired Gas Turbines (79-GT-177) (A) **Ji 102**  
Maintenance Considerations in the Design of the Direct-Cycle Nuclear Gas Turbine Power Plant (79-GT-116) (A) **Ji 97**  
Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Ji 96**  
A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ji 94**  
Nitinol Engines (C) **S 50**  
NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**  
Nuclear-Bi-Brayton System for Aircraft Propulsion (79-GT-119) (A) **Ji 98**  
Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ji 98**  
A Partial Oxidation Staging Concept for Gas Turbines Using Broadened Specification Fuels (79-GT-169) (A) **Ji 102**  
Performance Estimation of Partial Admission Turbines (79-GT-123) (A) **Ji 98**  
Power Requirements for Offshore Hydrocarbon Production from the Brent System (79-GT-44) (A) **Ji 91**  
Practical "On-Engine" Microprocessor Control and Monitoring Systems for Gas Turbines (79-GT-181) (A) **Ji 103**  
Pressurized Fluidized Bed Coal Combustion Exposure Testing of Gas Turbine and Heat Exchanger Materials (79-GT-166) (A) **Ji 103**  
Problems of Moisture Separation in Wet Steam Turbines (78-WA/GT-4) (A) **Ap 88**  
Recent Developments on Gas Turbine Control Systems (79-GT-98) (A) **Ji 95**  
A Review of Small Gas Turbine Combustion System Development (79-GT-136) (A) **Ji 99**  
The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Ji 96**  
A Simple Solar Gas Turbine Plant (79-GT-90) (A) **Ji 95**  
Starting Torque Characteristics of Small Aircraft Gas Tur-

bines and APU's (79-GT-95) (A) **Ji 98**  
Steam and Gas Turbine Combined Cycle Equipment Currently Available for Natural Gas Pipelines (79-GT-114) (A) **Ji 97**  
Surface Geometry Considerations for Gas Turbine HTGR Power Plant Heat Exchangers (78-WA/HT-20) **Ap 90**  
Surge-Induced Structural Loads in Gas Turbines (79-GT-91) (A) **Ji 95**  
System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**  
A 2500-hp Addition to the Ruston Range (79-GT-205) (A) **Ji 105**  
Undersea Turbines (BTR) **Ji 49**  
Undersea Turbines (ES) **Mr 22**  
Use of Transient Temperature Measurements to Determine Combustor Liner Heat Transfer Coefficients (79-GT-171) (A) **Ji 102**  
Water-Cooled Gas Turbine Technology Development: Fuels Flexibility (79-GT-72) (A) **Ji 93**  
Wind and Hydro (ES) **O 19**  
Wind Turbine Energy (EN) **Je 88**

**Turbocomponents**  
Matching of Turbocomponents Described by the Example of Impeller and Diffuser in a Centrifugal Compressor (79-GT/tar-9) (A) **O 82**

**Turbo-Compressors**  
Improvement in Recuperative Gas Cycles by Means of a Heat Generator Partly By-Passing the Recuperator—Application to Open and Closed Cycles and to Various Kinds of Energy (79-GT-115) (A) **Ji 97**  
Noise Generated from Non-Uniform Clearance of Turbo-Compressors and Fans of Aircraft (79-DET-30) (A) **N 111**

**Turbogenerators**  
Spiral Vibrations Due to the Seal Rings in Turbogenerators Thermally Induced Interaction Between Rotor and Stator (79-DET-61) (A) **N 115**

**Turbomachine Rotors**  
Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit (78-WA/GT-2) (A) **Ap 88**

**Turbomachinery**  
Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Je 99**  
Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 86**  
Elastomer Mounted Rotors—An Alternative for Smoother Running Turbomachinery (79-GT-149) (A) **Ji 100**  
Teleretry for Turbomachinery **Mr 30**

**Turbomachinery Blades**  
Vibration Analysis of Turbomachinery Blades using Dedicated Discretization and Twisted Beam Theory (79-DET-85) (A) **N 117**

**Turbomachinery Flow**  
Determination of the Reynolds-Stress Tensor with a Single Stanted Hot-Wire in Periodically Unsteady Turbomachinery Flow (79-GT-130) (A) **Ji 98**

**Turbomachines**  
Effect of Interblade Phase Angle and Incidence Angle on Cascade Pitching Stability (79-GT-153) (A) **Ji 99**  
An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) (A) **My 94**

**Turboprop Engines**  
The Growth and Evolution of the TPE331 (79-GT-164) (A) **Ji 101**

**Turbopumps**  
A Torquewhirl Analysis of the Space Shuttle Main Engine High Pressure Turbopumps (79-DET-76) (A) **N 118**

**Turbulence**  
Account of Film Turbulence for Predicting Film Cooling Effectiveness in Gas Turbine Combustors (79-GT-200) (A) **Ji 104**  
Eddy Viscosity Calculations of Turbulent Buoyant Plumes (79-HT-51) (A) **N 103**  
Heat Transfer to Turbine Blades, with Special Reference to the Effects of Mainstream Turbulence (79-GT-26) (A) **Je 101**  
Heat Transfer in Turbulent Recirculatory Flows Affected by Buoyancy Forces in Rectangular Cavities (79-HT-77) (A) **N 105**  
Laser Anemometer Measurements in Turbulent Natural Convection over a Vertical Flat Surface (79-HT-106) (A) **N 108**  
Prediction of Incompressible Turbulent Separating Flow (78-WA/FE-4) (A) **Je 89**  
Turbulence Management in a High-Speed Boundary Layer Facility (79-FE-7) (A) **O 85**



### Turbulence Intensity

Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity (79-GT-24) (A) **Je 100**

### Turbulence Modeling

Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) (A) **O 94**

### Turbulent Boundary Layers

Transition Procedure of Stationary Boundary Layers (79-GT-128) (A) **Ji 98**

### Turbulent Burning

The Effect of Spacing on the Turbulent Burning of Vertical Parallel Walls (79-HT-26) (A) **O 93**

### Turbulent Diffusion Flames

Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Je 96**

### Turbulent Flow

Cooling Air in Turbulent Flow with Multi-Pass Internal Finned Tubes (78-WA/HT-52) (A) **Mr 96**

Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) (A) **Je 89**

Numerical Solutions for Turbulent, Swirling Flow through Target Flowmeters (78-WA/FM-4) (A) **Mr 92**

Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) (A) **Je 89**

### Turbulent Heat Transfer

An Analysis of Heat Transfer in a Turbulent Heat-Generating Flow with High Prandtl Numbers (79-HT-114) (A) **N 108**

Low Reynolds Number Effects on Sharp Cone Turbulent Heat Transfer Under Hypersonic Wind Tunnel Conditions (79-HT-89) (A) **N 106**

### Turbulent Heat Transport

Three-Dimensional Turbulent Heat Transport in Pipe Flow: Experiment and Model Validation (78-WA/HT-15) (A) **Mr 94**

### Turbulent Mixtures

Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **Ji 100**

### Turbulent-Velocity

Study of Mean- and Turbulent-Velocity Fields in a Large-Scale Turbine-Vane Passage (79-GT-33) (A) **Je 100**

Turner, R. C. (author) Real-Time Programming with Microcomputers (CB) **Ap 104**

Turner, T. R. Food System Galley for Space Shuttle (79-ENAs-47) (A) **O 91**

### Tutorial Introduction

A Tutorial Introduction to Discrete Time Optimal Control (78-WA/DSC-18) (A) **Ap 95**

Tuttle, R. N. The Effects of H<sub>2</sub> on Engineering Design of Oil and Gas Wells and Facilities (78-Pet-5) (A) **Ja 97**

Twerski, A. D. (author) Products Liability and the Reasonably Safe Product: A Guide for Management, Design, and Marketing (CB) **F 134**

### Twist Drill Grinder

A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**

### Twisted Beam Theory

Vibration Analysis of Turbomachinery Blades Using Dedicated Discretization and Twisted Beam Theory (79-DET-85) (A) **N 117**

### Twistless Yarns

Twistless Yarns and Woven Fabrics Made Therefrom (79-Tex-4) (A) **D 99**

### Two-Dimensional Model

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Je 93**

### Two Stage Turbocharging

An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Ja 86**

### Two-Stroke Cycle Diesel Engine

Parametric Analysis of a Turbocharged Two-Stroke Cycle Diesel Engine Air System (78-DGP-5) (A) **Ja 88**

## U

### U-Bends

Local Heat Transfer Measurements in and Downstream from a U-Bend (79-HT-82) (A) **N 105**

Uchiyama, Y. NO<sub>x</sub> Removal Process by Injection of NH<sub>3</sub>

and H<sub>2</sub>O<sub>2</sub> in Gas Turbine Exhaust Gas (79-GT-69) (A) **Ji 92**

Udell, K. S. Heat Transfer in a Bottom Burning Oil Shale Retort (79-HT-3) (A) **O 92**

Ueyama, H. Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

Uller, R. A. Instrumentation of an In-Place Piping System to Determine Causes and Effects of Transient Loads (79-PVP-60) (A) **S 98**

### UFO Sightings

Insects as UFO's (BTR) **F 56**

Ultman, D. An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) (A) **S 105**

### Ultrasonic Echo Ranging

Camera Focus via Ultrasonic Echo Ranging (BTR) **Ja 44**

### Underground Housing

Underground Housing (NB) **D 75**

### Underground Lifeline Systems

Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**

### Underground Railway Tunnels

Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 89**

### Underground Salt Cavities

Geomechanical Basis for Design of Underground Salt Cavities (78-Pet-59) (A) **F 126**

### Underground Temperatures

Geothermal Comes East (ES) **My 20**

### Undersea Applications

Hyperhemispherical Viewports for Undersea Application (78-WA/OCE-2) (A) **F 130**

### Undersea Power Cable

Undersea Power Cable (IF) **D 87**

### Undersea Turbines

Undersea Turbines (ES) **Mr 22; (BTR) Ji 49**

### Undersea Vehicles

Design for Remote Work in the Deep Ocean (78-WA/OCE-4) (A) **F 130**

### Underwater Hydraulic Motors

Seawater Hydraulic System (BTR) **N 68**

### Underwater Operational Safety Guide

Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) (A) **Ja 98**

### Underwater Pipelines

Dynamic Characteristics of an Underwater Pipeline (78-Pet-50) (A) **F 128**

Offshore Technology Conference—Another World (NR) **Ji 56**

### Underwater Tests

Servicing the Space Telescope (BTR) **N 57**

### Underwater Welding

Computer-Controlled Underwater Welding (BTR) **Mr 49**

Underwood, P. G. A Variable-Step Central Difference Method for Structural Dynamics Analysis—Part I: Theoretical Aspects (79-PVP-120) (A) **S 103; Part II: Implementation and Performance Evaluation (79-PVP-121) (A) S 104**

### Unequally Spaced Fan Rotors

Acoustics and Performance of High-Speed, Unequally Spaced Fan Rotors (79-GT-4) (A) **Je 98**

### Unfired Combined Cycle

GU-AN Unfired Combined Cycle Approach to Energy Utilization (79-GT-131) (A) **Ji 98**

### Unidirectional Composites

A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites (78-WA/Aero-1) (A) **Ap 100**

### Universal Fuses

Right Fuse Formula (BTR) **Ap 50**

### University Personnel

Employment Increase in University Personnel (EN) **N 80**

Uno, T. The Analytical and Experimental Studies on the Structural Design for the Absorber Tube (79-PVP-111) (A) **S 103**

Uplike, D. P. Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) (A) **Ag 103**

### Upper Internals Structure

Design Considerations in Liquid Metal Fast Breeder Reactor Upper Internals Structures (79-PVP-34) (A) **Ag 106**

Inelastic Analysis of the Upper Internals Structure for the Clinch River Breeder Reactor Plant (79-PVP-25) (A) **Ag 106**

### Upstream Effects

Unsteady Upstream Effects in Axial-Flow Supersonic Compressor Stages (79-GT-55) (A) **Ji 91**

Upton, T. E. Hydraulically Actuated Treating Packers for Dry Rock Geothermal Applications (79-PVP-23) (A) **Ag 105**

### Uranium

Patent Could Greatly Reduce Nuclear Fuel Costs (EN) **Ja 80**

### Uranium Enrichment Facilities

Gas Centrifugal Machines (ES) **D 21**

Uranium from Seawater (ES) **Ji 20**

### Urban Buses

Flywheel Buses (ES) **N 33**

### Urban Transit System

Advanced Urban Transit System (BTR) **N 71**

### Urban Transport

Energy Problems and Urban and Suburban Transport (CB) **Ap 104**

Urdaneta-B, A. H. Thermodynamic and Economic Analysis of Heat Pumps for Energy Recovery in Industrial Processes (78-WA/HT-64) (A) **Ap 93**

Urieli, I. A Numerical Model for Stirring Cycle Machines (79-GT/Isr-16) (A) **O 84**

Ursin, E. (author) Pollution and Policy: A Case Essay on California and Federal Experience with Motor Vehicle Air Pollution, 1940-1975 (CB) **Mr 98**

### Utilities

Coal Use Can Triple, But at Cost to Public and Industry (BTR) **O 48**

A Comeback for Hydroelectric (ES) **S 21**

The Difficulties in Phasing Out Oil (ES) **F 24**

Electric Load Management (ES) **O 18**

The Impact of Solar Power (ES) **My 21**

Improved Transformer Efficiency (ES) **O 19**

A National Park Story (ES) **Ji 21**

Repowering of a Small Utility—A Unique Solution to a Unique Problem (79-GT-15) (A) **Je 100**

Texans Back Fusion (ES) **O 19**

Three Mile Island—A Damage Assessment (ES) **Je 19**

A Vote of Confidence (ES) **Ap 20**

### Utility Boilers

Combustion Modifications for the Control of Air Pollutant Emissions from Coal Fired Utility Boilers (78-WA/APC-7) (A) **Ap 103**

Engineering Modeling of NO<sub>x</sub> Formation in Utility Boilers (78-WA/APC-1) (A) **Ap 102**

### Utility Combustion Turbines

Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**

### Utility Control System

The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**

### Utility Cost Reduction

Energy Consumption and Conservation in University Buildings (78-WA/PEM-4) (A) **My 95**

### Utility Industry

Cycling Operation of Fossil Fuel Power (79-JPGC-Pwr-5) (A) **D 97**

### Utility Systems

Electric Vehicle Demonstration (ES) **Ji 20**

Evaluating Gasified Coal (ES) **O 18**

### Utilization Improvement

Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-158) (A) **Ji 100**

### Utilization Method

Oil Shale Utilization Method (IF) **O 52**

Uyehara, O. A. Sound Power Levels of Large Engines Measured in Semi-Reverberant Environments (78-DGP-20) (A) **Ja 88**

Uzman, T. The Effects of Coolant Air Inlet Conditions on the Flow Regime Between a Turbine Disk and Its Casing (79-GT-35) (A) **Je 100**

## V

### Vacuum Dewatering

Preheat Temperature for Vacuum Dewatering of Sealed Bit Bearing Prior to Greasing (78-Pet-38) (A) **F 124**

Vaish, A. K. Combination of Modal Forces and Stresses in the Seismic Design of Piping Systems (79-PVP-112) (A) **S 102**

Valjajee, S. Statistical Analysis of the Influence of Process Variables on Noise Generation in Impact Hot Forming (79-DET-29) (A) **N 111**



**Vaka, G. A.** Shiftable and Overland Belt Conveyor Systems in Strip Mining (78-WA/MH-7) (A) **My 98**

**Valentine, J. V.** Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) (A) **S 108**

**Valentine, S. J.** Designing Reliability into High-Effectiveness Industrial Gas Turbine Regenerators (79-GT-199) (A) **JI 104**

**Validation Test**  
Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **JI 102**

**Vallerani, E.** Evolutionary Possibilities of the Spacelab Thermal Control Systems Towards Space Stations (79-ENAS-11) (A) **O 87**

**Value Pricing**  
OPEC—Meet UTECI (C) **JI 40**

**Valve Lifters**  
Lasers for Flow Inspection of Valve Lifters (BTR) **D 63**

**Valve Train Components**  
Evaluation of Internal Combustion Engine Valve Trains by an Empirically Tuned Simulation Model (78-DGP-9) (A) **Ja 87**

**Valves**  
Electro-Fluid Pulse-Width Modulated Valve (78-WA/DSC-8) (A) **Ap 94**

**Multi-Degree-of-Freedom Analysis of Power-Actuated Valves** (79-PVP-106) (A) **S 102**

**A Pressure Sensitive and Temperature Responsive Butterfly Valve for Cryogenic Service** (78-Pet-30) (A) **F 122**

**Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve** (78-WA/Prod-3) (A) **Mr 99**

**The Vibrational Behavior of a Turbine Rotor Containing a Transverse Valve** (79-DET-67) (A) **N 115**

**Van Hagen, T. H.** Surface Geometry Considerations for Gas Turbine (HTGR) Power Plant Heat Exchangers (78-WA/HT-20) (A) **Ap 90**

**van Hoften, J. D. A.** Investigation of a Pulsatile Flowfield Downstream from a Model Stenosis (78-WA/Bio-6) (A) **Mr 91**

**Van Meter, D. B.** Operation and Emission of a Stoker-Fired Boiler While Burning Refuse Derived Fuel and Coal Mixtures (78-WA/APC-2) (A) **Ap 103**

**Van Sambeek, L. L.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine: Part II—Rock Mechanics Evaluation (78-Pet-64) (A) **F 126**

**Van Wallegheem, W.** Design Fabrication of Petrobras Subsea Atmospheric Manifold Center (78-Pet-42) (A) **F 124**

**van Zanten, A. Th.** Wide-Band Random Axisymmetric Vibration of Cylindrical Shells (79-APM-13) (A) **S 106**

**Vance, J. M.** Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 99**

**Vanderplas, M. L.** Fatigue Threshold Stress Intensity and Life Estimation of ASTM-A106B Piping Steel (79-PVP-96) (A) **S 100**

**Vanderplaats, G. N.** Marine Condenser Design Using Numerical Optimization (78-DET-98) (A) **D 105**

**Vandiver, J. K.** A Pseudo-Random Noise Generator for Dynamic Response Testing of Offshore Structures (79-DET-42) (A) **N 112**

**Vane Interaction**  
Disc Vibration—Rotating Blade and Stationary Vane Interaction (79-DET-83) (A) **N 117**

**Vaneless Radial Diffusers**  
Distinctions Between Two Types of Self Excited Gas Oscillations in Vaneless Radial Diffusers (79-GT-58) (A) **JI 92**

**Vanes**  
A Design Review of Ceramic Components for Turbine Engines (79-GT-183) (A) **JI 103**

**Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes** (79-GT-163) (A) **JI 101**

**An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions** (79-GT-23) (A) **Ja 100**

**Influence of Freely Rotating Inlet Guide Vanes on the Return Flows and Stable Operating Range of an Axial Flow Fan** (79-GT-31) (A) **Ja 100**

**Water-Cooled Gas Turbine Technology Development: Fuels Flexibility** (79-GT-72) (A) **JI 93**

**Vapor Generators**  
An Analytical and Experimental Investigation of a Rotating Boiler (79-HT-33) (A) **O 84**

**Vapor Jet Pump**  
Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Je 96**

**Vapor/Liquid Interaction**  
Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**

**Vapor Pressure**  
Untapped Power Where River Meets Sea (BTR) **Ja 49**

**Vaporization**  
Liquid Droplet Heating and Vaporization in the Catalytic Combustor (79-HT-52) (A) **O 92**

**Vardy, A. E.** Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) (A) **Je 89**

**Variable Combustor**  
A Double Acting Variable Geometry Combustor (79-GT-197) (A) **JI 104**

**Variable Geometry Casings**  
Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **JI 95**

**Variable Parameters**  
Approximate Eigenvalues for Systems with Variable Parameters (78-WA/AFM-29) (A) **Je 93**

**Variable Vane**  
New Variable Vane Two-Shaft Gas Turbine (BTR) **D 58**

**Variation Coefficient**  
Reliability and Optimal Replacement via Coefficient of Variation (79-DET-108) (A) **D 106**

**Variational Methods**  
The Analysis of an Elastic Four-Bar Linkage on a Vibrating Foundation Using a Variational Method (79-DET-64) (A) **N 114**

**Varma, A.** ... and Clarification (C) **N 55**

**Varus-Vaigus**  
Effect of Fixed Axes of Rotation on the Varus-Vaigus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) (A) **Mr 91**

**Vasconcelos, H. F.** The Response of a Hert Machine to Impact Loading Using Finite Elements (79-DET-40) (A) **N 112**

**Vascular Reconstructive Surgery**  
Fusion of Engineering and Medicine **S 81**

**Vaughan, D. A.** Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

**Vaughn, E. A.** Fiber Migration and Characteristics in Open-End Spun Cotton-Rich Blended Yarn (79-Tex-7) (A) **D 100**

**Vay, J.** Fatigue Strength of Silicon Nitride for High-Speed Rolling Bearings (79-GT-83) (A) **JI 95**

**Vayo, V. W.** Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**

**Vectored Thrust Engines**  
Augmented Vectored Thrust Engines and the Problem of Avoiding Hot Gas Recirculation (79-GT-10) (A) **Je 99**

**Vegetable Oil**  
Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Ja 88**

**Vehicle Behavior**  
An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **JI 94**

**Vehicle-Follower Control System**  
Longitudinal Control of Automated Guideway Transit Vehicles within Platoons (78-WA/DSC-13) (A) **Ap 94**

**Vehicle Noise**  
Realistic Prediction and Control of Vehicle Noise Resulting from Road Inputs (79-DET-75) (A) **N 116**

**Vehicle Research**  
Advanced Electric Car (BTR) **O 44**

**Expanding Horizons** (ES) **S 20**

**Vehicle Suspensions**  
Are Active Suspensions Really Necessary? (78-WA/DE-12) (A) **Mr 88**

**Vehicle-Trailer Systems**  
Optimal Control Concepts for the Characterization and Design of Highway Vehicle—Trailer Systems (78-WA/DSC-27) (A) **Ap 96**

**Vehicular Gas Turbines**  
Mobile Gas Turbine Power (IF) **O 53**

**Velkoff, H.** An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) (A) **S 105**

**Velocity**  
Acoustic Flowmeters for Pipelines **O 28**

**An Approach to Optimum Subsonic Inlet Design** (79-GT-51) (A) **JI 91**

**Cost Optimization Models for Planned Replacement** (79-DET-115) (A) **D 107**

**Effect of Interblade Phase Angle and Incidence Angle on**

**Cascade Pitching Stability** (79-GT-153) (A) **JI 98**

**Effect of Temperature on Composite Sandwich Structures Subjected to Low-Velocity Projectile Impact** (78-WA/Aero-2) (A) **Ap 100**

**Investigation of Secondary Liquid Phase Structure in Steam Wake** (78-WA/FE-13) (A) **Je 89**

**Mean Velocity and Decay Characteristics of the Guidevane and Stator Blade Wake of an Axial Flow Compressor** (79-GT-9) (A) **Je 99**

**Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading** (79-GT-202) (A) **JI 104**

**Measured Velocity Characteristics of the Flow in the Impeller of a Centrifugal Compressor** (79-HT-32) (A) **O 94**

**Melt Spinning of Fibers: Effect of Air Drag** (78-Tex-7) (A) **Ja 92**

**MHD Test Record** (ES) **JI 21**

**Miniature Velocimeter** (BTR) **JI 50**

**Mixed Forced and Free Convection on Inclined Surfaces** (78-WA/HT-46) (A) **Ap 92**

**Model Study of the Effect of a Reef on Ocean Waves** (78-WA/OCE-3) (A) **F 130**

**Momentum and Temperature Balance Measurements in an Axisymmetric Turbulent Plume** (79-HT-42) (A) **O 94**

**Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions** (78-DET-89) (A) **Ja 90**

**Performance Estimation of Partial Admission Turbines** (79-GT-123) (A) **JI 98**

**A Phase-Velocity Description of Aerodynamic and Electrostatic Transport of Cotton Fibers and Trash** (79-Tex-1) (A) **D 99**

**Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses** (78-WA/Prod-11) (A) **My 102**

**A Preliminary Survey of Seismic Velocities Through In-Situ Rock Salt** (78-Pet-79) (A) **F 128**

**Selection of Sizing of Velocity Actuated Subsurfaces Safety Valves** (78-Pet-8) (A) **Ja 97**

**Soot and the Combined Cycle Boiler** (79-GT-67) (A) **JI 93**

**Study of Mean- and Turbulent-Velocity Fields in a Large-Scale Turbine-Vane Passage** (79-GT-33) (A) **Je 100**

**Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures** (79-GT-157) (A) **JI 100**

**Velocity Distortions**  
The Prediction of Steady, Circumferential Pressure and Temperature Distortions in Multistage Axial Flow Compressors (79-GT-184) (A) **JI 103**

**Velocity Exponent**  
Velocity Exponent for Erosion and Noise Due to Cavitation (79-FE-9) (A) **O 85**

**Velocity Gradients**  
Aerodynamic and Aeroelastic Characteristics of Oscillating Loaded Cascades at Low Mach Number: Part I—Pressure Distribution, Forces, and Moments (79-GT-111) (A) **JI 96**

**Film Cooling from Three Rows of Holes on Adiabatic, Constant Heat Flux and Isothermal Surfaces in the Presence of Variable Free-Stream Velocity Gradients and Turbulence Intensity** (79-GT-24) (A) **Ja 100**

**Velocity Measurements**  
Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Ja 98**

**Velocity Probes**  
An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**

**Velocity Profile**  
High-Flying Ideas (C) **O 41**

**Velocity Spectrum Methods**  
Seismic Restraint Spacing: A Velocity Spectrum Method and Other Considerations (79-PVP-12) (A) **Ag 104**

**Venkatesan, C.** Optimization of Aircraft Undercarriages (79-DET-89) (A) **D 104**

**Venkatrayulu, N.** Influence of Freely Rotating Inlet Guide Vanes in the Return Flows and Stable Operating Range of an Axial Flow Fan (79-GT-31) (A) **Ja 100**

**Venkayya, V. B.** Head Strength Evaluation of Recessed Threaded Fasteners (79-DET-117) (A) **D 107**

**Ventilation**  
Aerospace Systems Analysis Approach to Energy Conservation in Heating, Ventilating and Air Conditioning Systems (79-ENAS-1) (A) **O 86**

**Ventilation Systems**  
Nuclear Plant Safety (EN) **JI 87**

**Solar Factors** (C) **Ap 43**

**Verbal Aids**  
Pegs of Memory (BTR) **Ap 47**

**Vernery, G.** Analysis of Anisotropic Sandwich Plates

- Assuring the Continuities of Displacements and Transverse Stresses at the Interfaces (78-WA/Aero-6) (A) **Ap 100**
- Vermeslen, P. J.** Acoustic Control of the Exit Plane Thermodynamic State of a Combustor (79-GT-180) (A) **Ag 100**
- Vermes, Geza** The Modeling of NO Generation from Coal-Derived Liquids in Combustion Turbines (79-JPGC-GT-4) (A) **D 98**; Thermophoresis-Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) (A) **Ap 88**
- Verrill, A. P.** Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**
- Verrier, F. E.** Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**
- Vertical Cylinders**  
Combined Convective Heat Transfer From Vertical Cylinders in a Horizontal Flow (78-WA/HT-45) (A) **Mr 96**
- Vertical Elutriator**  
Laser Doppler Anemometry at the Inlet of a Vertical Elutriator (79-Tex-9) (A) **D 100**
- Vertical-Lateral Dynamics**  
Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**; Part II—Simulated Versus Experimental Data (78-WA/DSC-36) (A) **Ap 99**
- Vertical Loads**  
Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**
- Vertical Plates**  
Natural Convection from Vertical Plates with Semicircular Leading Edges (79-HT-104) (A) **N 108**
- Vertical Slots**  
Double-Diffusive Convection in an Infinitely Tall Slot (78-WA/HT-8) (A) **Mr 93**
- Vessel Design**  
Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **Ji 97**
- Vessel Flaw**  
Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**
- Vessels**  
An Investigation into Unsteady Two-Phase Depressurization of Vessels Through Orifices and Short Pipes (78-WA/HT-36) (A) **Mr 95**
- Vibrage Stoker Fired Boiler**  
Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Ja 99**
- Industrial Application of a 66,000 lb/hr Vibrage Stoker Fired Boiler (78-IPC-Fu-4) (A) **Ja 91**
- Vibrating Foundations**  
The Analysis of an Elastic Four-Bar Linkage on a Vibrating Foundation Using a Variational Method (79-DET-64) (A) **N 114**
- Vibrating Lift**  
On a New Type of Vibrating Lift (79-DET-23) (A) **N 111**
- Vibration**  
Compact Self-Damped Pneumatic Isolators for Road Vehicles (79-DET-101) (A) **D 105**
- Vibration Absorbers**  
Optimum Vibration Absorbers for Linear Damped Systems (78-WA/DE-22) (A) **Mr 96**
- Vibration Analysis**  
Accurate Reduction of Stiffness and Mass Matrices for Vibration Analysis and a Rationale for Selecting Master Degrees of Freedom (79-DET-18) (A) **N 110**
- Application of Data Dependent Systems to Diagnostic Vibration Analysis (79-DET-7) (A) **N 109**
- Failure Prevention, Vibration Analysis, and Design Automation **N 95**
- A Fibre-Optic Laser-Doppler Probe for Vibration Analysis of Rotating Machines (79-GT/Isr-11) (A) **O 83**
- Vibration Analysis of Continuous Systems by Dynamic Discretization (79-DET-12) (A) **N 110**
- Vibration Analysis of Turbomachinery Blades Using Dedicated Discretization and Twisted Beam Theory (79-DET-85) (A) **N 117**
- Vibration Characteristics**  
Vibration Characteristics of Asymmetric Cross-Section Bladed Disk Under Rotation (79-DET-94) (A) **D 105**
- Vibration Controller**  
A Structure-Borne Velocity-Sensing Vibration Controller (79-DET-86) (A) **N 117**
- Vibration Damping Treatment**  
Engine Evaluation of a Vibration Damping Treatment for Inlet Guide Vanes (79-GT-163) (A) **Ji 101**
- Vibration Isolation**  
The Design and Use of Rubber Bearings for Vibration Isolation and Seismic Protection of Structures (79-PVP-58) (A) **S 98**
- Vibration Modes**  
An Analysis of Aeroengine Fan Flutter Using Twin Orthogonal Vibration Modes (79-GT-126) (A) **Ji 98**
- Moderately Large Amplitude Plate Vibration Modes (79-DET-17) (A) **N 110**
- Vibration Monitoring**  
Ambient Vibration Monitoring for Assessing the Structural Health of Production Platforms (78-Pet-71) (A) **F 127**
- An Investigation of the Early Detection of Defects in Ball Bearings by the Vibration Monitoring (79-DET-45) (A) **N 113**
- Vibration Response**  
An Analytic Model for Ball Bearing Vibrations to Predict Vibration Response to Distributed Defects (79-DET-87) (A) **D 104**
- Coupled Lateral-Vertical Dynamics of Rubber-Tired Automated Guideway Transit Vehicles with Random Guideway Inputs (78-WA/DSC-30) **Ap 99**
- Coupled Vertical-Lateral Dynamics of a Pneumatic Tired Vehicle: Part I—A Mathematical Model (78-WA/DSC-35) (A) **Ap 99**
- Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) (A) **Ja 98**
- Vibration Signals**  
Time Domain Analysis of Machinery Vibration Signals Using Digital Techniques (79-DET-13) (A) **N 110**
- Vibration Techniques**  
Defect Location in Structures by a Vibration Technique (79-DET-46) (A) **N 114**
- Vibrations**  
Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Ji 95**
- A Comparison of Environmental Effects on Dynamic Behavior of Graphite/Epoxy Composites with Aluminum Alloys (78-WA/Aero-10) (A) **Ap 101**
- Computer Simulation and Verification of I.C. Engine Vibration Characteristics (78-DGP-24) (A) **Ja 89**
- Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Sub-synchronous Vibration (79-GT-86) (A) **Ji 95**
- A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**
- Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Ja 88**
- The Effect of Internal-Flow on the Dynamic Responses of a Cantilever Pipe (78-Pet-57) (A) **F 126**
- A Floor Response Spectrum Method for Structures Immersed in a Dense Medium (79-PVP-57) (A) **S 97**
- Forced Vibrations of a Single Stage Axial Compressor Rotor (79-GT-108) (A) **Ag 100**
- Ice Floe Induced Structural Vibrations (78-Pet-21) (A) **Ja 98**
- Nonsynchronous Vibrations Observed in a Supercritical Power Transmission Shaft (79-GT-146) (A) **Ag 100**
- Oil Squeeze Film Dampers for Reducing Vibration of Aircraft Gas Turbine Engines (79-GT-133) (A) **Ji 98**
- Planet Indexing in Planetary Gears for Minimum Vibration (79-DET-73) (A) **N 116**
- Self-Excited Vibration of a Rotating Hollow Shaft Partially Filled with Liquid (79-DET-62) (A) **N 113**
- A Simple Method for Monitoring and Measuring Low Level Vibrations (79-DET-41) (A) **N 112**
- Vibration of Nuclear Power Plant Primary Coolant System Piping During Normal Operation (79-DET-28) (A) **N 111**
- Wide-Band Random Axisymmetric Vibration of Cylindrical Shells (79-APM-13) (A) **S 106**
- Vibration System**  
Experimental Study of Input Transducer Dynamics in Bearing Identification (78-WA/DSC-6) (A) **Ap 94**
- Vibratory Feeders**  
Study of Vibratory Feeder with Repulsive Surface Having Directional Characteristic (79-DET-27) (A) **N 111**
- Video Analysis**  
Debugging Through Video Analysis (BTR) **Ja 51**
- Viking Orbiter**  
Marian 'Papprint' (BTR) **Ja 42**
- Vinees, J. D.** The Shallow Solar Pond: An Alternative Process Hot Water Generator (79-Tex-8) (A) **D 100**
- Vinson, J. R.** Behavior of Rectangular Composite Material Plates Under Lateral and Hygrothermal Loads (78-WA/Aero-5) (A) **Ap 100**
- Viscoelastic Fluid**  
An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) (A) **Ja 93**
- Viscoelastic Phase**  
Stress in Glass Fibers Induced by the Draw Force (78-WA/APM-20) (A) **My 104**
- Viscoelasticity**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**
- A Theory of Viscoelastic Analogy for Wave Propagation Normal to the Layering of a Layered Medium (78-APM-24) (A) **S 107**
- Viscoplasticity**  
Elastic and Viscoplastic Impact Bending Response Analysis of Nuclear Shipping Cask Structures (79-PVP-43) (A) **Ag 107**
- Viscosity**  
Effects of Geometry on Hydrodynamic Film Thickness (78-Lub-24) (A) **Ja 95**
- Fuel Property Effects on Combustor Performance (79-GT-178) (A) **Ji 102**
- Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) (A) **S 108**
- Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) (A) **Ja 93**
- Viscosity of Nitrogen Near the Critical Point (78-WA/HT-38) (A) **Ap 91**
- Viscosity Measurements**  
Vegetable Oil as a Diesel Fuel (78-DGP-19) (A) **Ja 88**
- Viscosity Analysis**  
Application of Viscous Analysis to the Design of Jet Exhaust Powered Lift Installations (79-GT/Isr-15) (A) **O 84**
- Viscous Damping**  
Transient Response of Continuous Elastic Structures With Viscous Damping (78-WA/APM-5) (A) **My 102**
- Viscous Damping Coefficient**  
Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) (A) **Ja 93**
- Viscous Flow**  
Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) (A) **Mr 91**
- Design and Development of a Monorotor Gas Turbine Auxiliary Power Unit (78-WA/GT-2) (A) **Ap 88**
- Viscous Flow Analysis**  
An Application of 3-D Viscous Flow Analysis to the Design of a Low-Aspect-Ratio Turbine (79-GT-53) (A) **Ji 91**
- Viscous Flow Analysis of Mixed Flow Rotors (78-WA/GT-3) (A) **Ap 88**
- Viscous Incompressible Flow**  
A Numerical Study of the Laminar Viscous Incompressible Flow through a Pipe Orifice (78-WA/FE-5) (A) **Ja 89**
- Viscous-Viscoelastic Model**  
Creep and Recovery of 2618 Aluminum Alloy Under Combined Stress With a Representation by a Viscous-Viscoelastic Model (78-WA/APM-3) (A) **My 103**
- Viskanta, R.** Mixed Layer Growth and Heat Transfer in a Stratified Fluid Heated from Below (79-HT-107) (A) **N 108**; Slag Transport Models for Radiant Heater of an MHD (78-WA/HT-21) (A) **Ap 90**
- Villet, G. C.** Rotary Bed Solid Desiccant Drying: An Analytical and Experimental Investigation (79-HT-19) (A) **O 83**; Transient Response of a Latent Heat Storage Unit: An Analytical and Experimental Investigation (79-HT-36) (A) **O 95**
- Vogel, J. W.** Application of Abrasive Coatings to Clearance Control in the Gas Turbine (79-GT-48) (A) **Ag 88**
- Volters, C. T.** Contact Drying of a Sheet of Moist Fibrous Materials (79-Tex-2) (A) **D 99**
- Volume Heating**  
Flow Dynamics of Volume-Heated Boiling Pools (79-HT-102) (A) **N 108**
- Volumetric Energy Sources**  
Onset of Convection in Fluid Layers with Nonuniform Volumetric Energy Sources (79-HT-100) (A) **N 107**
- Valley, G. C.** Thermal Effects in Laser Beam Propagation Through Flow Tubes (79-HT-94) (A) **N 107**
- Voluntary Accreditation**  
Codes, Standards and Certificate of Authorization Program—Part 1 - Establishing Safety Standards **Ja 33**
- VonRiesemann, W. A.** Have Engineers Been Replaced by

Computers? (79-PVP-10) (A) **Ag 104**

**Von Tunzelmann, G. M.** (author) Steam Power and British Industrialization to 1860 (CB) **Jl 106**

**von Turkovich, B. F.** Structure-Property Relations in Free Machining Steels (78-WA/Prod-32) (A) **My 101**

**Vorres, K. S.** Effect of Composition of Melting Behavior on Coal Ash (78-WA/CD-2) (A) **Je 91**

**Vortex Diodes**  
Use of Vortex Diodes Applied to Post Accident Heat Removal Systems (79-HT-9) (A) **O 92**

**Vortex Effects**  
Vortex Effects Resulting from Transverse Injection in Turbine Cascades, and Attempts at Their Reduction (79-GT-18) (A) **Je 99**

**Vortex Flowmeter**  
Fluctuating Pressure Profile and Sensor Design for a Vortex Flowmeter (78-WA/AFM-3) (A) **Mr 92**

**Vortex Motions**  
Vortex Motions Induced by V-Grooved Rotating Cylinders and their Effect on Mixing Performance (79-FE-2) (A) **O 84**

**Vortex Ring**  
Motion of a Large Dusty Buoyant Thermal With a Vortex Ring (78-WA/APM-8) (A) **My 103**

**Vortex Shedding**  
Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Je 88**

**Vorticity**  
The Production of Vorticity and Its Effects on the Flow in Centrifugal Compressor Impellers (79-GT-113) (A) **Jl 96**

**Vrabie, D. L.** Design of an HTGR for High-Temperature Process Heat Applications (79-JPGC-NE-2) (A) **D 98**

**Vykukal, H. C.** High-Pressure Protective System Technology (79-ENAs-15) (A) **O 87**

**W**

**Wachel, J. C.** Dynamic Vibrations of Stationary Engines (78-DGP-1) (A) **Je 86**

**Wacker, E. A.** Heavy-Duty Diesel Engine Piston Design for Low Blowby and Oil Consumption (78-DGP-16) (A) **Je 87**

**Waddell, J. D.** Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) (A) **Mr 87**

**Wadkins, R. P.** Low Pressure Rod Bundle Critical Heat Flux Tests (79-HT-46) (A) **O 95**

**Wadlington, R. P.** Computer-Designed Gearing **Je 32**

**Waghorne, R.** Third Body Formation and the Wear of PTFE Fibre-Based Dry Bearings (79-Lub-7) (A) **D 102**

**Wagner, P. A.** Development of a Space Shuttle Plant Growth Unit (79-ENAs-19) (A) **O 88**

**Wake Flames**  
Laminar Wake Flame Heights (79-HT-68) (A) **N 104**

**Wake Flow**  
The Development of Wake Flow in a Centrifugal Impeller (79-GT-152) (A) **Jl 99**

**Wake Survey**  
Mean Velocity and Decay Characteristics of the Near- and Far-Wake of a Compressor Rotor Blade of Moderate Loading (79-GT-202) (A) **Jl 104**

**Wakes**  
Investigation of Secondary Liquid Phase Structure in Steam Wake (78-WA/FE-13) (A) **Je 89**

**Walburn, A. B.** Environmental Control System Design for the Tomahawk Cruise Missile (79-ENAs-7) (A) **O 86**

**Wald, G. A.** Factorial Experimentation: A Solution to the Multi-Variable Problem in Environmental Engineering (78-WA/APC-5) (A) **Ap 102**

**Waldron, K. J.** Design Considerations of Small Solar Collector Systems Using Plane Heliostats (79-Sol-2) (A) **Ag 92**

**Walker, B. H.** Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**

**Walker, E. A.** Judging Judgment (C) **Mr 44**

**Wall Cracks**  
Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**

**Wall Friction**  
Aerodynamic Design of Fixed and Variable Geometry Nozzleless Turbine Casings (79-GT-87) (A) **Jl 95**

**Wall Pressure**  
Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Je 88**

**Wall Solar Collectors**  
On the Optimization of Trombe Wall Solar Collectors (78-WA/Sol-13) (A) **Je 95**

**Wallenberger, F. T.** Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orlon® Fabrics (78-Tex-5) (A) **Je 92**

**Walimann, Th.** Blade-Row Interaction in an Axial Flow Subsonic Compressor Stage (79-GT-92) (A) **Jl 96**

**Walirich, M.** Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) (A) **Mr 91**

**Walsh, D. J.** Determination of Stress Intensification Factors for Integrally Reinforced 45-Deg Lateral Branch Connections (79-PVP-98) (A) **S 101**

**Walsh, T. F.** Application of Low-Btu Producer Gas To Industrial Steam Generation (78-IPC-Pwr-2) (A) **Je 91**

**Walsh, W. K.** Stabilization of Crimp in Bulked Nylon Carpet Yarns by Radiation Induced Deposition of Cross-Linked Polymers (78-Tex-11) (A) **Je 92**

**Walters, S.** The Age of Prediction Through Measurement and Control **F 41**

**Walther, A. G.** Seismic-Evaluation of Piping and Supports at Diablo Canyon Site Units 1 and 2, for the Postulated Hogni Earthquake (79-PVP-100) (A) **S 102**

**Walther, G. C.** Screening Properties of Silicon-Base Ceramics for Turbine Engine Applications (78-WA/GT-12) (A) **Ap 89**

**Walzer, P.** An Electronically Controlled Automotive Gas Turbine (79-GT-74) (A) **Jl 94**

**Wander, S. M.** Program to Establish Ceramic Technology Readiness for Large Combustion Turbine Utility Application (78-WA/GT-8) (A) **Ap 88**

**Wandmacher, C.** (author) Metric Units in Engineering (CB) **Mr 96**

**Wang, A. S. D.** A Non-Linear Microbuckling Model Predicting the Compressive Strength of Unidirectional Composites (78-WA/Aero-1) (A) **Ap 100**

**Wang, C. P.** Determination of Specific Heat of Meat (78-WA/HT-57) (A) **Mr 97** Heat Transfer and the Killing of Bacteria in Thermal Sterilization of Meat Roll (78-WA/HT-56) (A) **Mr 97**

**Wang, G. S.** Natural Convection from Vertical Plates with Semicircular Leading Edges (79-HT-104) (A) **N 108**

**Wang, H. T.** Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90** Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) (A) **F 130**

**Wang, J. T. S.** Cylindrical Panels of Various Shapes for Pressure Vessels (79-PVP-110) (A) **S 102** Dynamic Analysis of Cantilever Beams (79-PVP-78) (A) **S 99**

**Wang, L. R.-L.** Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) (A) **My 95**

**Wang, S. S.** An Analysis of Delamination in Angle-Ply Fiber Reinforced Composites (78-WA/Aero-8) (A) **Ap 101** Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) (A) **Mr 90**

**Warm Prestress**  
Investigation of Warm Prestress for the Case of Small d/T During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **S 98**

**Warner, J. A.** Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**

**Warner, J. G.** Heat Transfer to Curved Surfaces from Heat Generating Pools (79-HT-113) (A) **N 108**

**Warner, R. J.** Computer Simulation and Design of the Control System for a Wind Turbine Generator (79-DE-9) (A) **Ag 102** Generating Ductile Iron Fatigue Data with a Calibrated Turning Fork System (79-DE-11) (A) **Ag 102**

**Warpinski, N. R.** Base Pressure Associated with Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) (A) **S 108**

**Warren, R.** Fiber Reinforced Metals in Turbine Blades (79-GT/Isr-1) (A) **O 82**

**Warren, W. J.** ASME National Meetings—The Future? **Ap 78**

**Washam, R. M.** Characteristic Time Correlations of Pollutant Emissions from an Annular Gas Turbine Combustor (79-GT-194) (A) **Jl 104**

**Washington, M. S.** More on the Black M.E. at Tuskegee (C) **Ag 42**

**Wasop, E. J.** Coal Slurry Pipelines for the Next Decade **D 58** A Perspective on Coal Slurry Pipelines for the Next Decade (78-Pet-65) (A) **F 126**

**Wasserberg, S.** Test and Analysis of the ASALM-PTV Insulated Combustion Chamber (79-ENAs-21) (A) **O 88**

**Waste**  
Environmental Effects of Burning Wastes (BTR) **S 61**  
Failure Analysis of Tubes with Wastages (79-PVP-113) (A) **S 103**

**Waste Conversion**  
Recycling Plant, Human and Animal Wastes to Plant Nutrients in a Closed Ecological System (79-ENAs-29) (A) **O 89**

**What To Do When You're Out of Hay (BTR)** **Ap 54**

**Waste Disposal**  
Disposing of Nuclear Wastes (ES) **Ap 20**  
The High Cost of Waste Disposal (ES) **Ag 18**  
Municipal Incinerator an Environmental Success (BTR) **F 61**

**Nuclear Power and Radioactive Waste: Sub-Seabed Disposal Option? (CB)** **Ap 104**

**Waste Fuel Combustion**  
Techniques of Solid Waste Fuel Combustion (79-IPC-Pwr-3) (A) **D 100**

**Waste-Fueled Steam Boiler**  
Waste-Fueled Steam Boiler (IF) **D 66**

**Waste Heat**  
Combined Cycles for Pipeline Compressor Drives Using Heat (79-GT-162) (A) **Jl 101**  
DD-963 Class Waste Heat Recovery System Experience (79-GT-159) (A) **Ag 100**  
Fluid Selection and Optimization of an Organic Rankine Cycle Waste Heat Power Conversion System (78-WA/Ener-6) (A) **Je 93**  
The Stirling Engine, An Energy Converter for Cogeneration Applications (78-WA/Ener-4) (A) **Je 92**  
Waste Heat Recovery (ES) **N 32**

**Waste Heat Disposal**  
Waste Heat Disposal to Air with Mechanical and Natural Draft—Some Analytical Design Considerations (78-WA/HT-17) (A) **Mr 94**

**Waste-Heat Greenhouses**  
Design and Performance Considerations of Evaporative-Pad, Waste-Heat Greenhouses (78-WA/PID-1) (A) **My 94**

**Waste Heat Recovery**  
Application of a Power Recovery System to Gas Turbine Exhaust Gases (79-GT-167) (A) **Jl 101**  
Improvements in the Utilization of Gas Turbine Compression Plant (79-GT-156) (A) **Jl 100**  
Industrial and Institutional Waste Heat Recovery (CB) **Je 104**  
The Role of the Ceramic Heat Exchanger in Energy and Resource Conservation (79-GT-106) (A) **Jl 96**

**Waste Heat Recovery Systems**  
Focusing on Paper Mills (ES) **Je 19**

**Waste Heat Rejection**  
Review of Waste Heat Rejection from Geothermal Power Plants (79-HT-15) (A) **O 82**

**Waste Immobilization**  
Physical Modeling of Electric Glass Melting Furnaces for High Level Waste Immobilization (79-HT-97) (A) **N 106**

**Waste Materials**  
Artificial Reefs (ES) **Ap 20**

**Waste Oil**  
Reprocessing Waste Oil (ES) **Ap 21**

**Waste Recovery**  
Developing Analytical Procedures for Reproducible Determinations of Thermo-Chemical Characteristics of RDF—An ASTM Program (78-WA/Fu-8) (A) **Je 97**  
A Review of Solid Waste Resource Recovery Technology: Appraisal of Operations and Economics with Assessment and Economics with Assessment of Newly-Developed Processing (79-ENAs-40) (A) **O 90**

**Waste Refuse**  
Equipment Design Competition for Waste Refuse (EN) **Je 60**

**Waste Storage**  
Nuclear Waste Storage (NB) **Jl 65**

**Waste Storage Mine**  
Comparison of a Finite Element and a Finite Difference Computer Code in Heat Transfer Calculations (79-PVP-63) (A) **S 98**



## Waste Streams

Power from Waste Heat Streams—An Advanced Concept (BTR) **Ag 48**

## Waste Treatment

Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

## Waste Treatment Systems

Development of Oil Content Monitors for Navy Ships (79-ENAS-42) (A) **O 90**

## Waste Heat

Recovery of Wasted Heat with Centralized and Distributed Heat Pump Systems (78-WA/HT-63) (A) **Ap 93**

## Wastes

Corrosion and Deposits from Combustion of Solid Waste, Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) (A) **Je 97**

## Wastewater

Ozone-UV Treatment for Oily Wastewater Cleanup (79-ENAS-39) (A) **O 90**

"Zero Discharge" Wastewater (E5) **F 25**

## Wastewater Treatment Plants

Imperious Liner for Catch Basins (BTR) **Ap 54**

Walanabe, J. Acoustic Emission Testing During a Burst Test of a Thick Walled 2 1/4Cr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

## Water

Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) (A) **S 105**

A Boiler Without Water Is . . . (78-Pet-19) (A) **Je 98**

Dielectric Constant of Water and Steam **S 44**

Water in Synthetic Fuel Production: The Technology and Alternatives (CB) **Je 100**

## Water Bath

Temperature Stability in a 0.9 Cubic Meter Water Bath (78-WA/TM-2) (A) **F 131**

## Water Bodies

On the Horizontal Recirculation in Water Bodies Due to Thermal Discharge (79-HT-84) (A) **N 108**

## Water-Cooled Gas Turbine

Super-Efficient Water-Cooled Gas Turbine (BTR) **Je 50**

System Status of the Water-Cooled Gas Turbine Technology Program (79-GT-39) (A) **Ji 92**

## Water-Cooled Turbine

Design Considerations for the Closed-Loop Water-Cooled Turbine (79-GT-71) (A) **Ji 93**

Water-Cooled Gas Turbine Technology Development: Fluids Flexibility (79-GT-72) (A) **Ji 93**

## Water Cooling

Water-Cooled Gas Turbine Development Program Wheel-box Tests (79-GT-76) (A) **Ag 98**

## Water Heat Rejection

Charge Air Cooling: Its Influence on Jacket Water Heat Rejection and Volumetric Efficiency of a Turbocharged Diesel Engine (78-DGP-10) (A) **Je 87**

## Water Heating System

Major Public Solar Hot Water Heater Technology Transfer Program (78-DET-77) (A) **Je 89**

## Water Jets

Atomization of Water Jets and Sheets in Axial and Swirling Airflows (79-GT-170) (A) **Ji 102**

Can Nozzle Design be Effectively Improved for Drilling Purposes (78-Pet-51) (A) **F 125**

Simultaneous Melting and Freezing in the Impingement Region of a Liquid Jet (78-WA/HT-28) (A) **Mr 95**

## Water-Lubricated Bearings

Stick-Slip Induced Noise Generation in Water-Lubricated Compliant Rubber Bearings (79-Lub-21) (A) **D 104**

## Water Management Systems

Conversion of Industrial Plants to Use Coal as Fuel (78-IPC-Fu-2) (A) **Je 91**

## Water Production Plant

Geothermal Power and Water Production Studies at the University of California (78-WA/Enr-7) (A) **Je 93**

## Water Pumps

Water Pump Tests (IF) **My 59**

## Water Recovery

Applications of the Thermoelectrically Integrated Membrane Evaporator Subsystem (79-ENAS-48) (A) **O 91**

## Water Sheets

Atomization of Water Jets and Sheets in Axial and Swirling Airflows (79-GT-170) (A) **Ji 102**

## Water Systems

Geothermal Energy (EN) **Ji 88**

## Water Tables

Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 86**

## Water Temperature

New Sizing Agent Can Reduce Pollutants (EN) **Ji 68**

## Water Transmission System

Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) (A) **My 95**

## Water Treatment

Sophisticated Water Treatment (BTR) **Ap 53**

## Waterflood Facility

The Techniques Involved in the Design, Construction, and Operation of a Waterflood Facility in South Louisiana Marshlands (78-Pet-7) (A) **Je 97**

## Waterjet Pumps

Marine Operation of Gas Turbine Engines and Waterjet Pumps for Small Passenger Vessels (79-GT-22) (A) **Je 99**

Waterland, L. R. Source Analysis Modeling for Environmental Assessment (78-WA/APC-10) (A) **My 96**

## Watersheds

Automated Biomonitoring Applications to Remote Water Quality Stations and Satellite Data Retrieval: New Developments in Achieving Real-Time Biosensing for Watershed Management (79-ENAS-41) (A) **O 89**

## Waterway Systems

Rail-to-Barge Transportation of Coal (78-WA/MH-6) (A) **My 98**

Watkins, L. W. Operating Experience with Marine Riser Buoyancy (78-Pet-56) (A) **F 128**

Watson N. An Evaluation of Two Stage Turbocharging for Efficient High-Output Diesel Engines (78-DGP-2) (A) **Je 88**

Watts, H. A. Steady Thermal Convection from a Concentrated Source in a Porous Medium (79-HT-69) (A) **N 104**

## Wave Instability

Wave Instability of Mixed Convection Flow on Inclined Surfaces (79-HT-105) (A) **N 107**

## Wave Machines

Ultimate Wave Machine (BTR) **Ag 44**

## Wave Motions

Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**

## Wave Power

Wave and Tidal Power (IF) **Je 58**

## Wave Propagation

A Theory of Viscoelastic Analogy for Wave Propagation Normal to the Layering of a Layered Medium (79-APM-24) (A) **S 107**

## Wave Velocities

Sonic Wave Mode Conversion During Three-Dimensional Logging (78-Pet-22) (A) **Je 98**

## Waves

Growth of Interfacial Waves in Closed Horizontal Channels (78-WA/FE-8) (A) **Je 89**

Harmonic Waves in Layered Composites: New Bounds on Eigenfrequencies (78-WA/APM-23) (A) **My 105**

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) (A) **F 130**

Way, S. Application of a Hot Air Turbine for Efficiency Improvement in MHD/Steam Power Plants (79-GT-36) (A) **Ji 90**

Wayne, R. W. The Performance of Automotive Hand Controls (78-WA/DESC-38) (A) **Ap 99**

## Weak Extinction Limits

Weak Extinction Limits of Turbulent Heterogeneous Fuel/Air Mixtures (79-GT-157) (A) **Ji 100**

## Weapon Guidance

Satellite Signals to Guide Missiles (BTR) **D 80**

## Weapon System

Future Tactical Fighter Requirements—A Propulsion Technology Update (79-GT-46) (A) **Ji 91**

## Wear

Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**

On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/Prod-23) (A) **My 100**

Relation Between Wear in Cr Ni Steels and Debris Transport at High Temperature (950°C) (79-Lub-11) (A) **D 103**

A Reliable Spline Coupling (78-WA/Aero-11) (A) **Ap 101**

Second International Conference on Wear of Materials **Je 76**

Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**

## Wear Characteristics

Die Wear Characteristics in High-Speed Cropping (78-WA/Prod-2) (A) **My 99**

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) (A) **Je 95**

## Wear Data

A New Cumulative Model—Part 3 (78-WA/APM-19) (A) **My 104**

## Wear Life

Tool Wear and Tool Life Gear Hobbing (78-WA/Prod-34) (A) **My 101**

## Wear Rate

Effects of AlCl<sub>3</sub> Additive on Cutting Forces and Diamond Wear Rate While Cutting Granite With a Single Diamond (78-Pet-39) (A) **F 124**

## Wear Tests

Summer Comfort Features and Fabric Performance in Next-to-Skin Fabrics—Wear Tests With Cotton and Dacron®/Orion® Fabrics (78-Tex-5) (A) **Je 92**

Water Pump Tests (IF) **My 59**

## Wear Value

Reliability Analysis of Cutting Tools (78-WA/Prod-9) (A) **Je 90**

## Weather

Climates of the States (CB) **Je 104**

Weaver, W. Dynamic Simulation of LMFBR Plant Under Natural Circulation (79-HT-61) (A) **O 91**

Webb, B. C. Art of Pipeline Piggings (78-Pet-74) (A) **F 127**

Webb, P. R. Field Studies of Slagging in Tangentially Fired Boiler Furnaces—Part 1: Labadie Field Trial (78-WA/Fu-10) (A) **Je 97**

Webb, R. L. Toward a Common Understanding of the Performance and Selection of Roughness for Forced Convection (78-WA/HT-61) (A) **Ap 93**

Webb, B. W. High-Pressure Protective System Technology (79-ENAS-15) (A) **O 87**

Weber, H. G. Design and Test of an Extremely Wide Flow Range Compressor (79-GT-80) (A) **Ag 98**

Weber, J. T. Depressurization of Internally Heated Boiling Pools (79-HT-101) (A) **N 107**

## Web

Development of a Design Procedure for Forged Bevel Gears with a Web (79-DE-13) (A) **Ag 102**

Wedding, J. B. Spectral and Probability-Density Nature of Square-Prism Separation-Attachment Wall Pressures (78-WA/FE-3) (A) **Je 88**

## Wedges

Base Pressure Associated with Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) (A) **S 108**

Wei, R. P. Fatigue Crack Growth in 2 1/4Cr-1Mo Steel exposed in Hydrogen Containing Gases (79-PVP-102) (A) **S 101**

Weichbrodt, B. An Analytic Model for Ball Bearing Vibrations to Predict Vibration Response to Distributed Defects (79-DET-87) (A) **D 104**

Weldinger, P. Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) (A) **My 96**

Weidner, C. K. Objective: Objectivity (C) **Ja 40**

Weigand, R. Fatigue Strength of Silicon Nitride High-Speed Rolling Bearings (79-GT-83) (A) **Ji 95**

Weight/Mass Controversy **Mr 42**

Si - The Weight/Mass Controversy **Mr 42**

Weight Reduction **Consequences of Using Q & T Steels to Reduce Weight and Increase Service Life of Railway Freight Cars (78-WA/RT-18) (A) **My 94****

Weinberg, P. Ceramics in Rolling Element Bearings (79-GT-68) (A) **Ji 93**

Weinstein, A. S. (author) Products Liability and the Reasonably Safe Product: A Guide for Management, Design and Marketing (CB) **F 134**

Weisman, J. Transition Boiling Heat Transfer in a Vertical Round Tube (79-HT-47) (A) **N 102**

Weismann, G. F. For Spring Materials: A Simple Test of Stress Relief Annealing **F 38**

Weld Defects **Hof Tapping of Ethylene Pipelines (78-Pet-1) (A) **Ja 97****

Weld Materials **Elevated Temperature, Cyclic Loadings and Irradiation Effects on Fatigue Crack of LMFBR Pressure Vessels (79-PVP-59) (A) **S 98****

Weld Repair **An Analysis Procedure for Predicting Weld Repair Residual Stresses in Thick Walled Vessels (79-PVP-31) (A) **Ag 105****

An LEFM Analysis for the Effects of Weld Repair Induced Residual Stresses on the Fracture of the HSST ITV-8 Vessel (79-PVP-30) (A) **Ag 105**



Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**

#### **Welded Plates**

Identification of Cracks in Circular Plates Welded at the Contour (79-DET-106) (A) **D 106**

#### **Welded Steel Cases**

The Case for Welded Steel Cases (BTR) **Ap 52**

#### **Welding**

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/Prod-4) (A) **My 99**

Computer-Controlled Laser Welding (BTR) **Ja 49**

Detection of Fatigue Crack Formation in Nozzle Welding of Pressure Vessels (79-PVP-101) (A) **S 102**

#### **Welding Assembly**

Mammoth Automated Welding Assembly (BTR) **D 57**

#### **Welding Screen**

Mobile Welding Screen (IF) **F 65**

#### **Welding Systems**

Computer-Controlled Underwater Welding (BTR) **Mr 49**

#### **Weldments**

Effect of Heat Treatment on Elevated Temperature Fatigue-Crack Growth Behavior of Two Heats of Alloy 718 (78-WA/PVP-3) (A) **My 95**

Science of the Big Bend (BTR) **Ji 46**

#### **Well Drilling**

Directional Drilling Completion Method Geothermal Wells (78-Pet-35) (A) **F 123**

#### **Well Pressure**

Annular Geometry—Its Effect on Kick Tolerance (78-Pet-63) (A) **F 127**

#### **Well Stimulation**

Kine-Frac: A New Approach to Well Stimulation (78-Pet-25) (A) **Ja 99**

#### **Wellhead Cellar**

Characteristics of a Dry, Subsea Well Completion (78-Pet-41) (A) **F 124**

#### **Wellhead Equipment**

Subsea Chamber Design for the Dry Containment of Wellhead Equipment (78-Pet-43) (A) **F 125**

#### **Wellheads**

Wellhead Flow Predictions for Texas-Louisiana Geopressured Reservoirs (79-HT-70) (A) **N 104**

Wells, C. H. Development of an Automated Life Prediction System for Steam Turbine Rotors (78-WA/DE-15) (A) **Mr 86**

Welty, J. R. An Analytical Study of Heat Transfer to a Horizontal Cylinder in a Large Particle Fluidized Bed (79-HT-78) (A) **N 105**

Wen, L. C. Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Je 95**

Wendland, D. W. The Segmented Oxidizing Monolith Catalytic Converter—Theory and Performance (79-HT-55) (A) **N 103**

Wendt, P. G. Design and Closed-Loop Testing of High-Pressure Centrifugal Gas Compressors for the Suppression of Subsynchrotron Vibration (79-GT-86) (A) **Ji 95**

Wendt, R. P. The Kinetics of Ironite Sponge H<sub>2</sub> Reactions (78-Pet-76) (A) **F 127**

Wenworth, W. E. The Storage and Regeneration of High Temperature Thermal Energy by Means of Reversible Chemical Reactions—The Ammonium Hydrogen Sulfate System (79-Sol-20) (A) **Ag 94**

Wepfer, W. J. Economic Sizing of Steam Piping and Insulation (78-WA/Enr-9) (A) **Je 93**

Wernli, R. L. Design for Remote Work in the Deep Ocean (78-WA/OCE-4) (A) **F 130**

Weeks, J. R. Elections to Fellow Grade **Ag 90**

#### **Western Energy Industry**

Geothermal Energy in the Western United States: Innovation Versus Monopoly (CB) **F 134**

#### **Western Energy Resources**

Air Policy Analysis for the Development of Western Energy Resources (78-TS-4) (A) **F 129**

Westhafer, P. J. (author) History of the Cumberland Valley Railroad (1835-1919) (CB) **D 109**

#### **Wet Air Oxidation**

Earth + Water + Air = Fire: The Wet Air Oxidation (WAO) of Wastes **D 30**

#### **Wet Steam Turbines**

Problems of Moisture Separation in Wet Steam Turbines (78-WA/GT-4) (A) **Ap 88**

Weth, G. Pressurized Fluidized Bed Pilot Electric Plant—A Technology Status (79-GT-193) (A) **Ji 104**

Whaley, P. W. A Distributed Optimum Control Law for Airborne Electro-Optical Packages (78-WA/DSC-39) (A) **Ap 99**

#### **Wheel Balancer**

Dynamic Analysis of a Prototype Wheel Balancer (79-DET-72) (A) **N 116**

#### **Wheel Design**

Redesigning the Wheel (BTR) **N 89**

#### **Wheel Development**

Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) (A) **My 93**

#### **Wheel/Rail Noise Generation**

Some Static and Dynamic Properties of Railway Wheels (78-WA/RT-4) (A) **My 92**

#### **Wheel Tread Profiles**

Establishment of Dampening Required for Control of Railroad Truck Hunting (78-WA/RT-17) (A) **My 94**

#### **Wheel Wear Mechanism**

Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed Part I: A Wheel Wear Mechanism (78-WA/Prod-29) (A) **My 101**

#### **Wheelbox Tests**

Water-Cooled Gas Turbine Development Program Wheelbox Tests (79-GT-76) (A) **Ag 98**

#### **Wheelchair Control**

Eye-Controlled Switch (C) **N 60**

#### **Wheelsets**

Instrumented Locomotive Wheels for Continuous Measurements of Vertical and Lateral Loads (79-RT-8) (A) **Ag 97**

Whicker, D. Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) (A) **Ja 95**

#### **Whirl Speed**

Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) (A) **Mr 84**

#### **Whirling**

Whirling Response and Stability of Flexibly Mounted, Ring Type Flywheel Systems (79-DET-71) (A) **N 116**

#### **Whirling Motions**

Analysis and Interpretation of Nonsynchronous Whirling in Turbomachinery (78-Pet-26) (A) **Ja 99**

Whitaker, S. Radiant Energy Transport in Porous Media (79-HT-1) (A) **O 92**

White, D. J. Methane Utilization (79-GT-139) (A) **Ji 100**

White, I. The Experimental Behavior of Premixed Flames in Tubes—The Effects of Diluent Gases (79-GT-168) (A) **Ji 101**

White, R. L. The Management of Energy Utilization in a Spacecraft Tracking Station and Its Industrial Applications (78-WA/PEM-2) (A) **My 94**

White, T. L. Application of Energy Conservation Methods to Industrial Refrigeration Systems (78-IPC-Pwr-5) (A) **Ja 91**

#### **White Rock Formation**

Martian "Pawprint" (BTR) **Ja 42**

Whitehead, A. A Comparison of the Performance of Steam Turbine Cycles Using Gas Contaminated Geothermal Steam (78-WA/Enr-3) (A) **Je 92**

Whitelaw, J. H. Measured Velocity Characteristics of the Flow in the Impeller of a Centrifugal Compressor (79-HT-32) (A) **O 94**

Whitman, G. D. Test of Thick Vessel with a Flaw in Residual Stress Field (79-PVP-29) (A) **S 96**

Whitney, D. W. Discrete Parts Assembly Automation—An Overview (78-WA/DSC-11) (A) **Ap 94**

Whittle, Sir F. (recipient) R. Tom Sawyer Award **Ja CR-13**

Wicks, A. L. Design and Development of a Rotating Water Table for Flow Studies in Turbomachine Stages (78-WA/DE-16) (A) **Mr 86**

#### **Wide-Band Random Vibration**

Wide-Band Random Axisymmetric Vibration of Cylindrical Shells (79-APM-13) (A) **S 106**

Wienske, S. A. Empirical Load-Response Analysis of a Railroad Tank Car (78-WA/RT-2) (A) **My 92**

Wierzbicki, T. Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) (A) **S 105**

Wilcox, H. A. Prospects for Farming the Open Ocean (79-Sol-32) (A) **Ag 96**

Wilke, D. Optimal Area Allocation in Multistage Heat Exchanger Systems (78-WA/HT-60) (A) **Ap 92**

Wilke, D. J. Global Noniterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) (A) **Mr 86**

Wilke, D. J. Regional Monotonicity in Optimum Design (79-DET-97) (A) **D 105**

Wilde, R. C. "Hard Hat" EVA, Personal Equipment to Support Large Scale Construction in Space (79-ENAS-43) (A) **O 90**

Wilson, F. J. Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) (A) **Mr 84**

Wilowski, G. M. Comparisons Between Plastic R-Curve Toughness Measurements, Impact Energy Data and Full-Scale Ductile Fracture Behavior of Cylindrical Vessels (79-PVP-115) (A) **S 103**

Williams, B. F. Do Photovoltaics Have a Future? (79-Sol-7) (A) **Ag 93**

Williams, C. R. A Study to Determine Roller Cone Cutter Offset at Various Drilling Depths (78-Pet-23) (A) **Ja 99**

Williams, W. R. Electrocoalescer Comparison Performance Tests (79-GT-174) (A) **Ji 102**

Willoughby, D. M. Elections to Fellow Grade **N 101**

Wilson, E. A. Applying Plastics in a Highly Reliable, Low Cost Cooling System for Microelectronics (78-DE-W-3) (A) **F 129**

Wilson, J. F. Equilibrium States of Eccentrically Loaded Flat Cars Traversing Irregular Curves (78-WA/RT-13) (A) **My 93**

Wilson, W. B. Cogeneration—Some Hardware and System Design Parameters (78-IPC-Pwr-6) (A) **Ja 91**

Conserving Energy via Cogeneration **Ag 31**

Economic Design Parameters for Combustion Turbine Exhaust Heat Recovery Systems (78-Pet-3) (A) **Ja 97**

Energy-Conserving Cogeneration-Performance, Economics and Legislation (78-WA/Enr-5) (A) **Je 92**

Wiltshire, F. R. Design Considerations in Liquid Metal Fast Breeder Reactor Upper Internals Structures (79-PVP-34) (A) **Ag 105**

#### **Wind Energy**

Multipurpose Wind Energy System (BTR) **S 59**

Wind Turbine Energy (EN) **Je 88**

#### **Wind Generated Power**

Economics of Wind Generated Power (78-Pet-80) (A) **F 128**

#### **Wind Generators**

Watch Out for Small Wind Generators! (ES) **Ag 18**

#### **Wind Machines**

Wind Machines Alive and Well (ES) **Ja 18**

#### **Wind Power**

Evaluating Wind Power (ES) **F 25**

High-Flying Ideas (C) **O 41**

The Trouble with Kites (C) **Ag 42**

Wind Power Through Kites **Je 42**

#### **Wind-Powered Machine**

Utilities Eye Wind-Powered Machine (BTR) **Ja 46**

#### **Wind Tunnels**

Low Reynolds Number effects on Sharp Cone Turbulent Heat Transfer Under Hypersonic Wind Tunnel Conditions (79-HT-89) (A) **N 106**

#### **Wind Turbines**

Wind and Hydro (ES) **O 19**

#### **Wind Tunnel**

Low-Turbulent High-Speed Wind Tunnel for the Determination of Cascade Shock Losses (79-GT-129) (A) **Ji 98**

Wind Tunnel Model Study of the Hot Exhaust Plume from the Compressor Research Facility at Wright-Patterson Air Force Base, Ohio (79-GT-186) (A) **Ji 103**

#### **Wind Turbine Generators**

Computer Simulation and Design of the Control System for a Wind Turbine Generator (79-DE-9) (A) **Ag 102**

#### **Wind/Water Energy**

Wind/Water Energy Converter (BTR) **My 48**

#### **Wind-Wheel System**

Wind-Wheel Electric-Power Generator (BTR) **Ja 48**

#### **Windmills**

"Thar She Blows!" (ES) **Mr 22**

Winer, W. O. Lubricant Limiting Shear Stress Effect on EHD FILM Thickness (79-Lub-12) (A) **D 103**

A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) (A) **Ja 94**

Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) (A) **Ja 94**

Some Observations on the Relationship Between Lubricant Mechanical and Dielectric Transitions Under Pressure (79-Lub-16) (A) **D 103**

Winfrey, R. C. Application of Minicomputers to Finite Element Analysis (79-DET-39) (A) **N 112**

Wink, R. E., Jr. Development of Deviation Control Tool (78-Pet-58) (A) **F 126**

Winterbone, D. E. A Multivariable Controller for an Automotive Gas Turbine (79-GT-73) (A) **Ji 94**

#### **Wire-Frame Assemblies**

Automated Inspection of Wire-Frame Assemblies (BTR) **Ji 43**

#### **Wire Reinforcement**

Cross Reinforcement in a GR/EP Laminate (78-

# Wire Ropes

- Contact Problems in Wire Ropes (79-DE-2) (A) **Ag 101**
- Wirths, G. Environmental Systems for Aquatic Animal Studies in the Shuttle Era (79-ENAS-45) (A) **O 98**
- Wittekindt, W. Matching of Turbocomponents Described by the Example of Impeller and Diffuser in a Centrifugal Compressor (79-GT-18-9) (A) **O 82**
- Wolke, G. U. The Influence of the Blading Surface Roughness on the Aerodynamic Behavior and Characteristic of an Axial Compressor (79-GT-102) (A) **Jl 95**
- Wofford, J. L. A Stability Criterion for the Occurrence of Thermally Induced Oscillations in Steady Laminar Flow (79-HT-74) (A) **N 105**
- Wolf, E. J. The Effect of Spring Stiffness, Friction Damping Level, and Car Body Stiffness Upon the Ride Quality of Railroad Freight Cars (78-WA/RT-8) (A) **My 93**
- Wolf, J. C. A High Temperature Turbine for Operation on Coal-Derived Fuel (79-GT-173) (A) **Jl 102**
- Wolfe, R. W. Design of Pressurized Fluid-Bed Combustor/Particulate Control System for Reliable Turbine Operation (79-GT-190) (A) **Jl 103**
- Wolfe, D. B. Natural Frequencies and Mode Shapes of Multi-Degree-of-Freedom Systems on a Programmable Calculator (79-DET-36) (A) **N 112**
- Wolfe, V. L., Jr. Ignition of Pyrolyzing Media under Convective Heating (79-HT-27) (A) **O 94**
- Wolten, D. W. Dynamic Analysis of a Prototype Wheel Balancer (79-DET-72) (A) **N 116**

# Women Engineers

1979 National Convention of the Society of Women Engineers, review (NR) **S 69**

The Society of Women Engineers—Guidance for Initiates into "A Man's World" (NR) **My 62**

Women: A Growing Force in Engineering (C) **D 52**

Update on Fast Track (EN) **S 73**

# Women's Progress

Uneven Progress for Women and Minorities (NB) **Ja 59**

Wood, C. O. An Evaluation of Velocity Probes for Measuring Nonuniform Gas Flow in Large Ducts (78-WA/PTC-1) (A) **Mr 90**

Wood, D. W. Design and Application of a Single Gas Turbine Matched with Two Tandem Driven Centrifugal Compressors (79-GT-81) (A) **Jl 94**

Wood, G. M. Elections to Fellow Grade **Ja 88**

Wood, K. Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) (A) **Ja 96**

Wood, L. R. Modeling and Experimental Analysis of a Fluidic Generator (79-DET-9) (A) **N 109**

# Wood-Fire Facility

Back to Wood (ES) **D 21**

Woods, G. E. Determination of Stress Intensification Factors for Integrally Reinforced 45-Deg Lateral Branch Connections (79-PVP-96) (A) **S 101**

Woods, R. L. An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) (A) **Ap 95**; A Fluidic Partial Pressure Sensor (78-WA/DSC-22) (A) **Ap 95**

Woods, R. R. Development of the Electrochemically Regenerable Carbon Dioxide Absorber for Portable Life Support System Application (79-ENAS-33) (A) **O 89**

# Work Systems

Design for Remote Work in the Deep Ocean (78-WA/OCE-4) (A) **F 130**

# Working Stress Level

A Generalized Torsion Spring Design Method (78-DET-86) (A) **Ja 90**

# World Energy Book

The World Energy Book: An A-Z, Atlas and Statistical Source Book (CB) **Ag 108**

# Worm-Pattern Drills

Deep-Hole Worm-Pattern Drills (IF) **My 58**

Wormley, D. H. Rail Passenger Vehicle Lateral Dynamic Performance Improvement Through Active Control (78-WA/DSC-14) (A) **Ap 94**

# Woven Fabrics

Twistless Yarns and Woven Fabrics Made Therefrom (79-Tex-4) (A) **D 99**

Wray, R. H. On the Motion of Rectangular Prismatic Bodies (79-FE-3) (A) **O 94**

Wright, A. P. Energy Implications of Industrial Effluent Regulations (78-TS-1) (A) **F 129**

Wright, D. R. Application of Aircraft Derivative and Heavy Duty Gas Turbines in the Process Industries (79-GT-12) (A) **Ja 99**

Wright, J. P. Optimization of Large Heat Pipe Radiators for

Long Life Space Heat Rejection Systems (79-ENAS-25) (A) **O 88**

Wu, E. R. Gas-Lubricated Porous Bearings of Finite Length-Self-Acting Journal Bearings (78-Lub-30) (A) **Ja 96**

Wu, H. An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/Prod-22) (A) **My 100**

Wu, K. F. The Influence of Thermodynamic Properties on the Calculation of Homogeneous Mass Flow Rates (78-WA/HT-48) (A) **Ap 92**

Wu, P. S. Effect of Cell Size on Natural Convection in High LD Tilted Rectangular Cells Heated and Cooled on Opposite Faces (78-WA/HT-5) (A) **Mr 93**

Wu, S. M. Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/Prod-16) (A) **My 99**; A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/Prod-36) (A) **My 101**; Optimal Adaptive Control of Active Recoil Mechanisms (78-WA/DSC-12) (A) **Ap 94**; Signature Analysis for Mechanical Systems via Dynamic Data System (DDS) Monitoring Technique (79-DET-10) (A) **N 110**

Wu, Y. C. Solar Receiver Performance of Point Focusing Collector System (78-WA/Sol-5) (A) **Ja 95**

Wyler, J. S. Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) (A) **Mr 90**

# X

# Xenon

Producing Metallic Xenon (BTR) **Ja 45**

Xlatris, G. D. Time Domain Analysis of Machinery Vibration Signals Using Digital Techniques (79-DET-13) (A) **N 110**

# Y

# Yachts

Installation Priorities: Yachts vs Ferries vs Gunboats (79-GT-118) (A) **Jl 97**

Yadigaroglu, G. Heat Transfer Immediately Downstream of the Quench Front During Reflooding (79-HT-48) (A) **N 102**

Yaga, Y. Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) (A) **Ja 95**

Yamaguchi, K. Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/Prod-3) (A) **My 99**

Yamanoto, S. Acoustic Emission Testing During a Burst Test of a Thick Walled 2 WCr-1Mo Steel Pressure Vessel (79-PVP-94) (A) **S 101**

Yamazaki, S. Analytical Considerations of Fuel Economy and Dynamic Response of a Regenerative High Temperature Automobile Gas Turbine—Part 1 (79-GT-127) (A) **Ag 100**

Yan, M. J. Composite Modal Damping in Structures (79-PVP-71) (A) **S 99**

Yanagida, T. The Use of Heat Exchangers with Thermocouple's Tubing in Ocean Thermal Energy Power Plants (78-WA/HT-65) (A) **Ap 93**

Yang, P. Y. EDC-A Regenerative CO Removal Subsystem for an Enhanced Capability Orbiter (79-ENAS-34) (A) **O 89**

Yanuki, Y. The Analytical and Experimental Studies on the Structural Design for the Absorber Tube (79-PVP-111) (A) **S 103**

Yao, L.-S. Asymmetric Boundary Layer on a Nonisothermally Heated Cone (79-HT-108) (A) **N 108**

# Yarn Quality

Fiber Migration and Characteristics in Open-End Spun Cotton-Rich Blended Yarn (79-Tex-7) (A) **D 100**

# Yarn Tension Variations

High-Frequency Yarn Tension Variations in Spinning (79-Tex-6) (A) **D 100**

Yen, Y. T. Fatigue Life for Small Gear Boxes (79-DET-49) (A) **N 114**; Optimum Oil Level for Small Gear Boxes (79-DET-50) (A) **N 113**

Yew, C. H. Estimation of the Mechanical Properties of Fluid Saturated Rocks Using the Measured Wave Motions (78-Pet-60) (A) **F 126**

Yocum, A. M. The Effects of Some Design Parameters of an Isolated Rotor on Inlet Flow Distortions (79-GT-93) (A) **Ag 99**

Yokoyama, Y. Study of Vibratory Feeder with Repulsive Surface Having Directional Characteristic (79-DET-27) (A) **N 111**

Yonezawa, M. Optimum Structural Design Under Constraint on Failure Probability (79-DET-114) (A) **D 106**

Yonushonis, T. Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) (A) **Ap 89**

York, R. E. An Experimental Investigation of the Heat Transfer to a Turbine Vane at Simulated Engine Conditions (79-GT-23) (A) **Ja 100**

Yoshida, T. Optimal Group Scheduling and Machining-Speed Decision under Due-Date Constraints (78-WA/Prod-39) (A) **My 102**

Yoshimoto, T. Characteristics of Combustion and NO<sub>x</sub> Formation in Large Turbulent Diffusion Flames in Furnace (78-WA/Fu-2) (A) **Ja 96**

Youn, K. C. Catalytic Reduction of Nitrogen Oxides Emitted from Stationary Sources (78-Pet-29) (A) **F 122**

Young, J. F. The Changing Technical Life of Engineers **Ja 20**

Young, M. F. Numerical Computation of the Loss Coefficients for Evacuated Cylindrical Collector Receiver Tubes (78-WA/Sol-3) (A) **Ja 94**

Young, M. W. Low Pressure Rod Bundle Critical Heat Flux Tests (79-HT-46) (A) **O 95**

Young, W. B. Compatibility Study of Piston Ring Coatings and Cylinders in Diesel Engines (78-DGP-3) (A) **Ja 88**

Yousri, S. H. An Experimental Study of First-Passage Failure of a Randomly Excited Structure (78-WA/APM-14) (A) **My 103**

Yu, K. P. Heat Transfer Immediately Downstream of the Quench Front During Reflooding (79-HT-48) (A) **N 102**

Yucel, A. Onset of Convection in Fluid Layers with Non-uniform Volumetric Energy Sources (79-HT-100) (A) **N 107**

Yuen, J. L. Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) (A) **S 102**

Yuen, W. Y. Contact Problems in Wire Ropes (79-DE-2) (A) **Ag 101**

Yung, D. Vapor/Liquid Interaction and Entrainment in Shell-and-Tube Evaporators (78-WA/HT-35) (A) **Mr 95**

Yung, K. M. Optical Analysis of Porous Metal Bearings (78-Lub-29) (A) **Ja 96**

# Z

Zachariason, R. A. Rail-to-Barge Transportation of Coal (78-WA/MH-6) (A) **My 98**

Zakay, V. Advanced Heat Exchanger Configurations for Coal-Fired Fluidized Beds (78-WA/HT-40) (A) **Ap 91**; The Optimization of Heat Exchanger Solidity for Coal-Fired Fluidized Bed Combustors (79-GT-78) (A) **Jl 94**

Zander, K. Fatigue Strength Calculation of Prestressed Pressure Vessels for Isostatic Presses (79-PVP-117) (A) **S 104**

Zandi, I. Cost Comparison Among Various Modes of Freight Transport Including Freight Pipeline (78-Pet-72) (A) **F 128**

Zaroffi, G. L. Modularity and Optimization in Fluid Loop Radiator Systems (79-ENAS-37) (A) **O 90**

Zatsepin, A. M. Economics of Wind Generated Power (78-Pet-80) (A) **F 128**

Zehnder, J. The Alusuisse Truck (78-WA/RT-15) (A) **My 93**

Zehner, P. Measurements of the Four-Quadrant Characteristics on a Multi-Stage Turbine (79-GT-107) (A) **Jl 96**

Zeluff, W. C. A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) (A) **Mr 90**

Zeman, K. P. Water-Cooled Gas Turbine Development Program Wheelbox Tests (79-GT-76) (A) **Ag 98**

Zeren, F. Design of a Freon Jet Pump for Use in a Solar Cooling System (78-WA/Sol-15) (A) **Ja 96**

Zick, L. P. (recipient) ASME Codes & Standards Medal **Ja CR-12**

Zinskie, J. H. Man-Machine Interactive Method for the

Development of Fatigue Design Equations (79-DET-96)  
(A) **D 104**

**Zirkelback, C. E.** An Overspeed Test Program in a Petrochemical Plant (78-DGP-27) (A) **Ja 89**

**Zompl, A.** Multi-Tool Machining Analysis—Part 1: Tool Failure Patterns and Implications (78-WA/Prod-24) (A) **My 100**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/Prod-25) (A) **My 100**

**Zook, C.** Recent Advances in Magnetic Liquid Sealing (79-DE-12) (A) **Ag 102**

**Zorzi, E. S.** The Dynamics of Rotor-Bearing Systems with Axial Torque—A Finite Element Approach (79-DET-68) (A) **N 115**; Nonsynchronous Vibrations Observed in a Supercritical Power Transmission Shaft (79-GT-146) (A) **Ag 100**

**Zuber, H.** Elections to Fellow Grade **N 101**

**Zury, H. L.** Internal Fluid Flow Management Analysis for Clinch River Breeder Reactor Plant Sodium Pumps (78-WA/NE-4) (A) **Mr 87**

**Zwisp, D. N.** ASME: People and Programs **O 24**; The Atlantic Council Meeting (Ed) **N 31**; "A Few Good Men" (Ed) **D 19**; Let's Emphasize the Positive! (Ed) **Ag 17**; Past is Prologue (Ed) **O 17**; A Pitch for SWE (Ed) **S 19**; A Year of Mixed Blessings (Ed) **Ji 19**





# Index to TRANSACTIONS OF THE ASME

Volume 101, 1979  
(Published Quarterly in Twelve Journals)

## A

- A-Moneim, M. T.** Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**
- Abdelhamid, A. H.** Experimental Investigation of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) **P 52; (D) P 59; (AC) P 60**
- Abdelmessih, A. H.** Blood Perfusion Measurements by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 50**
- Abe, T.** Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**
- Abrasion**  
Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**
- Absorbing Media**  
A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**
- Absorption**  
Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: SH Motion (79-WA/APM-5) **AM 625**
- Absorption Conditions**  
The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**
- Absorptivities**  
Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) **P 667**
- Aburwin, B. A.** The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**
- Accelerating Automobiles**  
An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**
- Acceleration Measurements**  
Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (73-WA/Bio-5) **AM 925**
- Acceleration Pattern**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) MD 26**
- Accelerational Analysis**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**
- Accelerometers**  
The Effect of Soft Tissue on Measurements of Vibrational Bone Motion by Skin-Mounted Accelerometers **BE 218**
- Achenbach, J. D.** Acoustic Emission From a Brief Crack Propagation Event **AM 107; Dynamic Crack-Tip Fields According to Deformation Theory (BN) AM 707**
- Acids**  
Effect of Composition on Melting Behavior of Coal Ash (78-WA/CD-2) **P 497**
- Acoustic Emission**  
Acoustic Emission From a Brief Crack Propagation Event **AM 107**
- Acoustical Noise Generation**  
Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**
- Acrylic Bone Cement**  
Materials for Human Implantation **BE 2**
- Active Chain Models**  
Contribution to Computer Construction of Active Chain

Code	Journal of	Published	Pages
<b>AM</b>	Applied Mechanics	March	1-240
		June	241-480
		September	481-720
		December	721-972
<b>BE</b>	Biomechanical Engineering	February	1-88
		May	89-156
		August	157-224
		November	225-292
<b>DS</b>	Dynamic Systems, Measurement, and Control	March	1-88
		June	89-184
		September	185-282
		December	283-364
<b>ERT</b>	Energy Resources Technology	March	1-80
		June	81-152
		September	153-208
		December	209-276
<b>F</b>	Fluids Engineering	March	1-152
		June	153-296
		September	297-408
		December	409-532
<b>HT</b>	Heat Transfer	February	1-192
		May	193-384
		August	385-576
		November	577-748
<b>I</b>	Engineering for Industry	February	1-96
		May	97-240
		August	241-384
		November	385-469
<b>L</b>	Lubrication Technology	January	1-112
		April	113-224
		July	245-392
		October	393-540
<b>MD</b>	Mechanical Design	January	1-168
		April	169-360
		July	361-520
		October	521-712
<b>MT</b>	Materials Technology	January	1-104
		April	105-180
		July	181-308
		October	309-408
<b>P</b>	Engineering for Power	January	1-212
		April	213-304
		July	305-496
		October	497-680
<b>PVT</b>	Pressure Vessel Technology	February	1-104
		May	105-184
		August	185-268
		November	269-336

(AC)	Author's Closure	(CR)	Conference Report	(Er)	Erratum
(Ad)	Addendum	(D)	Discussion	(F)	Forum
(BN)	Brief Note	(DDM)	Design Data and Methods	(Op)	Opinion
(BR)	Book Review	(EB)	Educational Brief	(TB)	Technical Brief
(C)	Comment	(Ed)	Editorial		

- Models Via Lagrangian Form **AM 181**
- Actuators**  
Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**
- Adams, D. R.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (D) **L 198** (AC) **L 200**
- Adams, G. G.** A Rigid Punch Bonded to a Half Plane (79-WA/APM-38) **AM 844**; A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**
- Adaptive Control**  
An Adaptive Control Policy of Discrete-Time Linear Systems With Random Parameters (TB) **DS 361**  
The Application of Model-Referenced Adaptive Control to Robotic Manipulators **DS 193**
- Adiabatic Diffusion Columns**  
Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**
- Adiabatic Solutions**  
Adiabatic Solutions for Finite Journal Bearings **L 492**
- Adiabatic Wall Temperature**  
Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**
- Additive Ejection**  
Effects of Additive Ejection on Lifting Hydrofoils (D) (AC) **F 404**
- Additives**  
Effects of Additive Ejection on Lifting Hydrofoils (77-FE-27) **F 244**
- Adjustable Linkages**  
Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**
- Aero Components**  
Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**
- Aero Engines**  
Manne Spy—SM1A Propulsion Module (78-GT-56) **P 149**
- Aerodynamic Blade Forces**  
A Vortex Model of the Darrieus Turbine: An Analytical and Experimental Study (79-WA/FE-6) **F 500**
- Aerodynamic Design**  
A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**
- Aerodynamic Parameters**  
A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**
- Aerodynamic Solutions**  
A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**
- Aerodynamic Surfaces**  
Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**
- Aerodynamics**  
Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) **P 259**
- Aeroelastic Stability**  
Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) **P 533**
- Aerospace Manufacturing**  
Economic and Management Aspects of Nondestructive Testing, Evaluation and Inspection in Aerospace Manufacturing (GR) **MD 174**
- Affiniwala, K. A.** A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) **MD 349**; A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**
- Aging**  
Viscoplasticity Based on Total Strain. The Modelling of Creep With Special Considerations of Initial Strain and Aging **MT 380**
- Agarwal, M. L.** Subsonic Turbulent Flow Past a Planar Fence **F 373**
- Agarwal, D. P.** A Probe for the Measurement of the Velocity Field **F 143**
- Agarwal, R. K.** An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**
- Aguliar, F.** Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) **F 251**
- Ahmed, G.** Free Energy of Granular Materials in Static Equilibrium (BN) **AM 944**
- Air**  
Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**  
Low-Velocity Heat Transfer to a Flat Plate in the Presence of a Corona Discharge in Air (78-WA/HT-47) **HT 157**
- Air Cooling**  
Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) **P 516**
- Air Cushion Vehicles**  
Two-Dimensional Dynamics of Tracked Ram Air Cushion Vehicles With Fixed and Variable Winglets (79-WA/DSC-11) **DS 321**
- Air Drag**  
Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) **I 73**
- Air Journal Bearing**  
An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**
- Air-Lubricated Journal Bearings**  
The Hybrid Isothermal Air Lubricated Journal Bearing **L 444**
- Air Model Tests**  
Air Model Tests of Labyrinth Seal Forces on a Whirling Rotor (D) (AC) **P 212**
- Air-Modulated Fuel-Injection System**  
An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**
- Air Temperature**  
Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**
- Air Transport Package**  
Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**
- Airblast Atomizer**  
Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**
- Aircraft**  
A Reliable Spline Coupling (78-WA/Aero-11) **I 421**
- Aircraft Design**  
Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**  
Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) **P 259**
- Aircraft Development**  
Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) **P 290**
- Aircraft Engines**  
A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**  
Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171**; (D) **L 177**; (AC) **L 178**  
Propulsion System Considerations for the Subsonic V/STOL (78-GT-57) **P 228**
- Aircraft Fuels**  
Alternative Aircraft Fuels (78-GT-59) **P 155**
- Aircraft Gas Turbines**  
The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**
- Airflow**  
Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**  
Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**  
Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 300**  
Local and Average Heat Transfer Characteristics for Turbulent Airflow in an Asymmetrically Heated Tube **HT 835**  
Predictions of Induced Air Flows in Hollow Cone Sprays **F 312**  
Turbulent Flow over a Disk Normal to a Wall (79-WA/FE-7) **F 461**  
Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 258**
- Airfoil Design Technology**  
Application of Nonseries Airfoil Design Technology to Highly Loaded Exit Guide Vanes (78-GT-108) **P 202**
- Airfoils**  
Airfoil Design in Subcritical and Supercritical Flows **AM 751**  
On the Design of Thin Subsonic Airfoils **AM 6**  
Drag on an Oscillating Airfoil in a Fluctuating Free Stream **F 391**  
Water Tunnel Visualizations of Dynamic Stall **F 376**
- Airless Spray Nozzles**  
Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**
- Akin, J. E.** A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**
- Akkerman, J. W.** Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) **I 458**
- Alamgir, Md.** Evaluation of Integrating Sphere Surfaces for Infrared Pyrometers (TN) **HT 379**; Over-All Heat Transfer from Vertical Cones in Laminar Free Convection: an Approximate Method (TN) **HT 174**; The Temperature Dependence of Surface Tension of Pure Fluids (Er) **HT 576**
- Algebraic Motions**  
Symmetrical Algebraic Motions in the Plane (78-DET-40) **MD 15**
- Algebraic Procedure**  
Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**
- Algebraic Tests**  
Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**
- Algorithms**  
Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**  
A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**  
A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**  
Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 328**  
Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 181**  
Frontiers of Optimal Design **MD 874**  
Fully Implicit Algorithms for Solving Partial Differential Equations (D) (AC) **F 289**  
Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 398**  
Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**  
On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 208**  
A State Space Method for Optimal Design of Vibration Isolators **MD 300**  
Topological Reaction Force Analysis (78-DET-58) **MD 192**
- Aligned Magnetic Field**  
Boundary-Layer Growth in Three Dimensions With Aligned Magnetic Field (BN) **AM 226**
- Allen, C. W.** A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (D) (AC) **L 265**
- Allen, R. R.** Multiport Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) **MD 258**
- Alloy Plate Steels**  
Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**
- Alloys**  
Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**  
Creep Failure Criteria for High Temperature Alloys **MT 374**  
Development of Fatigue Design Curves for Pressure Vessel Alloys Using a Modified Langer Equation **PVT 292**  
Effect of Metal Composition on Carburetizing of Steels (TB) **MT 173**  
Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-34) **L 201**; (D) **L 206**; (AC) **L 207**  
Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) (AC) **MT 176**  
Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) **MT 224**  
Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) **MT 191**  
The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 295**  
50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 86**  
Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**  
Producing a Tough, High Strength Cast Steel Free of

- Temper Embrittlement **MT 96**
- Seizure Resistance of Cast Aluminum Alloys Containing Dispersed Graphite Particles of Different Sizes **L 376**
- Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**
- Aitan, T.** Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **I 319**
- Alternative Aircraft Fuels**
- Alternative Aircraft Fuels (78-GT-59) **P 155**
- Alternative Power Plants**
- Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 166**
- Aluminum**
- Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**
- Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **I 319**
- Aluminum Alloys**
- Effect of Cyclic Loading on the Yield Surface **PVT 59**
- Seizure Resistance of Cast Aluminum Alloys Containing Dispersed Graphite Particles of Different Sizes **L 376**
- The Statistical Nature of Fatigue Crack Propagation **MT 148**
- Aluminum Sheets**
- A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 80**
- Aly, A. M. M.** Predicted Secondary Flows in Triangular Array Rod Bundles (79-WA/FE-2) **F 354; (D) (AC) F 362**
- Amibent Pressure**
- Nucleation Processes in Large Scale Vapor Explosions **HT 280**
- American Society of Mechanical Engineers**
- 3rd Design Technology Conference, review **MD 13**
- History of Ocean Engineering Division of ASME **ERT 154**
- Mayo D. Hershey Award **L 113**
- 15th Mechanisms Conference, review **MD 9**
- A Narrative History of the Petroleum Division of ASME: 1924-1978 **ERT 2**
- State-of-the-Art Review, new Series **MD 368**
- Tribute to C.W. McLarnan (Ed) **MD 361**
- 1978 ASME Western Design Engineering Conference, review **MD 184**
- 1978 Winter Annual Meeting **DS 89**
- 1978 Winter Annual Meeting Forum Theme (F) **DS 4**
- 1978 Winter Annual Meeting Report **MD 180**
- Amin, D. W.** Influence of Thermal Radiation on the Temperature Distribution in a Semi-Transparent Solid **HT 76**
- Amplitude-Frequency Characteristics**
- Amplitude-Frequency Characteristics of Large-Amplitude Vibrations of Sandwich Plates (BN) **AM 236**
- Amplitude Modulation**
- Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**
- Analysis Procedure**
- An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**
- Analysis System**
- Analysis of Roller/Ball Vibrations (D) (AC) **MD 519**
- Analysis Technique**
- Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 8; Part II: Applications (77-WA/NE-7) P 16**
- Analytical Developments**
- Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380; (D) (AC) MD 385**
- Analytical Formulations**
- Analytical Formulation of a Rate and Temperature Dependent Stress-Strain Relation **MT 254**
- Griffith Diffusers **F 473**
- A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**
- Analytical Investigation**
- Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**
- Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**
- Analytical Methodology**
- AMSEC Users Guide (GR) **MD 174**
- Analytical Methods**
- Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**
- Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/PM-25) **AM 31**
- Analytical Model**
- A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**
- The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**
- The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**
- Analytical Prediction**
- Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53; (D) (AC) MT 58**
- Analytical Procedures**
- Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**
- A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**
- Analytical Results**
- Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**
- A Generalized Procedure for the Design and Optimization of Fluted Gregg Condensing Surfaces **HT 335**
- Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**
- Inverse Design of Optimal Diffusers With Experimental Corroboration (79-WA/FE-15) **F 478**
- Inviscid Solution for the Problem of Free Overfall **AM 1**
- Analytical Solutions**
- Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**
- An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145; (D) L 512; (AC) L 153**
- Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**
- Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**
- Analytical Study**
- Analysis of Misalignment in the Tension Test **MT 68**
- An Analytical Study of Starved Porous Bearings **L 38**
- A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384; (D) P 392-394; (AC) P 395**
- A Vortex Model of the Darrieus Turbine: An Analytical and Experimental Study (79-WA/FE-6) **F 500**
- Analytical Techniques**
- Approximate Eigenvalues for Systems With Variable Parameters (78-WA/PM-29) **AM 203**
- The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77; Part II: Application and Experiment (78-DET-24) MD 89**
- Analytical Treatment**
- Degree of the Input-Output Equations of Certain Geared Five-Bar Mechanisms (78-DET-27) **MD 471**
- Anand, L.** On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**
- Anatomical Joints**
- Determining the In-Vivo Areas of Contact in the Canine Shoulder **BE 271**
- Anchor Bolts**
- Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**
- Andersen, J. A.** Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**
- Anderson, J. D., Jr.** Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**
- Andreas, E. L.** The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**
- Andriacchi, T. P.** Three-Dimensional Coordinate Data Processing in Human Motion Analysis **BE 279**
- Anechoic Wind Tunnels**
- Experimental Study of a Jet-Driven Helmholtz Oscillator (78-WA/FE-16) **F 383**
- Angle-Ply Cylindrical Shells**
- Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**
- Angelini, J. J.** Numerical Solutions of Nonsteady Two-Dimensional Transonic Flows **F 341**
- Angular Displacement**
- Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**
- Angus, J. C.** Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**
- Anisotropic Constituents**
- Analysis of Properties of Fiber Composites With Anisotropic Constituents (79-WA/PM-6) **AM 543**
- Anisotropic Factor**
- Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**
- Anisotropic Metals**
- A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**
- Anisotropic Problems**
- Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**
- Anisotropic Rough Surfaces**
- Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**
- Anisotropic Scattering**
- An Iterative Solution for Anisotropic Radiative Transfer in a Slab **HT 695**
- Anisotropic Solids**
- Consolidation in Transversely Isotropic Solids **AM 65**
- Anisotropy**
- On the Strength Anisotropy of Bone and Wood (79-WA/PM-21) **AM 832**
- Three-Dimensional, Steady-State Heat Conduction in Cylinders of General Anisotropic-Media **HT 548**
- Annamalai, K.** Critical Regimes of Coal Ignition (78-JPGC/Fu-1) **P 576**
- Annealing Process**
- Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**
- Annular Cascade**
- A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305; (D) P 313; (AC) P 314**
- Annular Diffuser Performance**
- Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**
- Annular Receiver Geometry**
- Techniques for Reducing Thermal Conduction and Natural Convection Heat Losses in Annular Receiver Geometries **HT 108**
- Annular Steps**
- Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) **F 230; (D) F 235; (AC) F 236**
- Annuli**
- Analysis of Turbulent Flow and Heat Transfer in Internally Finned Tubes and Annuli **HT 29**
- Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) **HT 171**
- Antifriction Properties**
- Friction and Wear of Sintered Cast Iron Products **L 54**
- Antipas, A.** A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) **PVT 181**
- Antonia, R. A.** Calculation of a Turbulent Boundary Layer Downstream of a Step Change in Surface Temperature **HT 144**
- Aortic Arch Atherosclerotic Formations**
- Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**
- Aortic-Shaped Chambers**
- Numerical Study of the Steady Axisymmetric Flow Through a Disk-Type Prosthetic Heart Valve in an Aortic-Shaped Chamber **BE 198**
- Apex Singularities**
- Note on Apex Singularities of a Wedge-Shaped Crack Under All Modes (BN) **AM 705**
- Appliance Safety**
- Appliance Safety by Design (GR) **MD 366**
- Approximating Elements**
- Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**
- Aquatic Plant Harvesting**
- Aquatic Plant Harvesting—Development of High-Speed Harvested Vegetation (GR) **MD 368**
- Aqueous Suspensions**
- A Three-Flux Method for Predicting Radiative Transfer in Aqueous Suspensions **HT 496**
- Arbitrary Plates**
- Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/PM-25) **AM 895**

## Archives

- Initial Postbuckling of Three-Hinged Circular Arch (BN) **AM 954**
- Argon Atmosphere**
- Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**
- Ariga, I.** Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**; Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23**; (D) **P 29**; (AC) **P 30**
- Arman, T.** A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **PVT 44**
- Armentrout, E. C.** Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) **P 373**
- Arnett, S. E.** A Rotating Stall Control System for Turbojet Engines (D) **P 313**; (AC) **P 314**
- Arnold, J. N.** Correlations for Natural Convection through High L/D Rectangular Cells (TN) **HT 741**
- Aroney, J.** Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**
- Aromatics Contents**
- The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) **P 524**
- Arora, J. S.** A State Space Method for Optimal Design of Vibration Isolators **MD 309**
- Arslan, A. V.** Nonlinear Analysis of Rail Vehicle Forced Lateral Response and Stability **DS 230**
- Arterial Stenoses**
- Fluid Mechanics of Arterial Stenoses **BE 157**
- Arterial Stenosis Models**
- Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141**; (D) **BE 149**; (AC) **BE 150**
- Articular Surfaces**
- Determining the In-Vivo Areas of Contact in the Canine Shoulder **BE 271**
- Articulation**
- Steering and Stability of Unsymmetric Articulated Railway Vehicles **DS 256**
- Artificial Organs**
- Biomaterials, Medical Devices, and Artificial Organs (BR) **MD 363**
- Asbestos Reinforcement**
- Wear and Thermal Processes in Asbestos-Reinforced Friction Materials **L 481**
- Ash**
- Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**
- Ash Constituents**
- The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 506**
- Ash Deposition**
- Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) **P 506**
- Thermophoresis—Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) **P 542**; (D) **P 546**; (AC) **P 547**
- Ashjaee, J.** A Wall-Flow-Direction Probe for Use in Separating and Reattaching Flows **F 384**
- Aspect Ratios**
- The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**
- Natural Convection Heat Transfer in Moderate Aspect Ratio Enclosures **HT 655**
- Assassa, G. M.** An Integral Method for Calculating Turbulent Boundary Layer With Separation **F 110**
- Assembly Automation**
- Discrete Parts Assembly Automation—an Overview (78-WA/DSC-11) (F) **DS 8**
- Assembly Measurements**
- Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**
- Assist Devices**
- Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**
- Asymmetric Loading**
- A Circular Crack Under Asymmetric Loads and Some Related Integral Equations (79-WA/AFM-12) **AM 821**
- Lateral Stability of Freight Cars With Axes Having Different

Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**

## Asymptotic Analysis

- A Closed Crack Tip Terminating at an Interface (78-WA/AFM-28) **AM 97**
- Asymptotic Behavior**
- Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**
- Asymptotic Stability**
- Guaranteed Asymptotic Stability for Some Linear Systems With Bounded Uncertainties **DS 212**
- Atherosclerosis**
- Ultrasonic Assessment of Simulated Atherosclerosis: In-Vitro and In-Vivo Comparisons **BE 73**
- Atherosclerotic Formations**
- Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**
- Aiburi, S. N.** Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**
- Atmospheric Cloud Physics Laboratory**
- Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**
- Atmospheric Pressure**
- Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**
- Atmospheric Turbulence Probes**
- The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**
- Atomization**
- Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**
- Atomized Liquids**
- Droplet Evaporation **HT 441**
- Atkinson, J. L.** Hyperhemispherical Viewports for Undersea Applications (D) **I 376**; (AC) **I 377**
- Atreya, A.** A Study of Cold Strip Rolling **MT 129**
- Attenuation Phenomenon**
- Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**
- Atlis, M. H.** Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/PROD-31) **I 335**; Nonlinear Thermoelastic Behavior of Structural Joints — Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/PROD-30) **I 348**
- Au, Y. H. J.** The Lancaster Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**
- Aumen, C. P.** A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **PVT 44**
- Auroral-Induced Current**
- Measurement of the Auroral-Induced Current in the Trans-Alaska Pipeline **ERT 156**
- Auslander, D. M.** About This Special Issue **DS 89**; Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) **DS 162**; An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) **DS 138**
- Austenitic Stainless Steels**
- Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**
- Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation **MT 275**
- Automated Drill Production**
- A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**
- Automated Guideway Transit**
- Vehicle-Follower Control for Dynamic Entrainment of Automated Guideway Transit Vehicles **DS 314**
- Automated Method**
- A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**
- Automatic Design Analysis**
- Topological Reaction Force Analysis (78-DET-56) **MD 182**
- Automatic Film Digitizer**
- Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**
- Automatic Machines**
- Optimal Programming of Working Cycles for Industrial

## Robots MD 250

## Automatic Mechanical System

- Multistage Geared Geneva Mechanism (78-DET-18) **MD 41**
- Automotive Gas Turbine**
- Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**
- Influence on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**
- Automotive Turbochargers**
- Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440**; (D) **P 448**; (AC) **P 449**
- Automotive Vehicles**
- Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**
- Auto-rotation**
- On the Motion of Rectangular Prismatic Bodies (78-FE-3) **F 193**
- Average Flow Factors**
- Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220**; (D) **L 229**; (AC) **L 230**
- Avionic Technology Developments**
- Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**
- Awaji, H.** Diametral Compressive Testing Method **MT 139**
- Axial Blade Optimization**
- A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**
- Axial Compression**
- Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression **AM 883**
- Axial Compressor Stage**
- Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**
- Axial Compressors**
- An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233**; (D) **P 245**; (AC) **P 248**
- Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**
- Axial Deformations**
- Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 218**
- Axial Flow**
- Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/AFM-24) **AM 37**
- Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**
- An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) **F 292**; (AC) **F 293**
- Performance Prediction for the Flow-Induced Motions of a Flexible Cylinder in Axial Flow Hydraulic Transmission (78-WA/OCE-5) **I 434**
- Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**
- Axial Flow Compressor**
- Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**
- Axial-Flow Turbomachine**
- Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**
- Axial Force**
- Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**
- Axial Loads**
- Instability of a Fiber-Reinforced Elastic Slab Subjected to Axial Loads **AM 839**
- Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**
- Axially Compressed Cylindrical Shell**
- Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**
- Axle Decays**
- Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**
- Axisymmetric Creep Buckling**
- Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression **AM 883**



## Axisymmetric Extrusion

Ductile Fracture in Axisymmetric Extrusion and Drawing—Part 1: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23**; Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 36**

## Axisymmetric Flexural Vibrations

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**

## Axisymmetric Flow

Numerical Study of the Steady Axisymmetric Flow Through a Disk-Type Prosthetic Heart Valve in an Aortic-Shaped Chamber **BE 198**

## Axisymmetric Imperfection

Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**

## Axisymmetric Loading

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

## Axisymmetric Operation

Performance of Spherical Gas Bearings in Axisymmetric Operation (TB) **L 240**

## Axisymmetric Separated Flow

Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**

## Axisymmetric Surfaces

Analysis of Diffuse-Specular Axisymmetric Surfaces with Application to Parabolic Reflectors (79-HT-22) **HT 889**

## Axles

Lateral Stability of Freight Cars With Axles Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**

Aylward, R. W. Plastic Collapse and the Controlling Failure Pressures of Thin 2:1 Ellipsoidal Shells Subjected to Internal Pressure **PVT 84**

## B

## Back-Melting

Back-Melting of a Horizontal Cloudy Ice Layer with Radiative Heating **HT 90**

## Backside Convection

Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**

## Backward Facing Step

Turbulent Flow Over a Plane Symmetric Sudden Expansion **F 348**

Badiani, M. Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**

Baer, W. H. (author) An Analysis of Effects of Electromechanical Vibration on Selected Specimens (GR) **MD 175**

Bagchi, A. A Study of Multiple Hole Extrusion **MT 135**

Bagci, C. Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**; Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**; General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**

Bailey, J. T. Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304**

Ballie, R. C. The Relative Value of Energy Derived from Municipal Refuse (D) **ERT 255**; (AC) **ERT 258**

Baines, N. C. Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440**; (D) **P 448**; (AC) **P 449**

Bair, S. A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) **L 258**; (D) **L 264**, **265**; (AC) **L 265**; Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) **L 251**; (D) (AC) **L 257**

Baker, C. T. H. (author) The Numerical Treatment of Integral Equations (BR) **AM 969**

Baker, J. E. A Compendium of Line-Symmetric Four-Bars (78-DET-14) **MD 509**; Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504**; (D) (AC) **MD 507**

Bakirtas, I. The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

Balakrishnan, A. Molecular Gas Radiation in the Thermal Entrance Region of a Duct **HT 489**

## Balancing Techniques

Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304**

Balje, O. E. First Order Pump Surge Behavior (D) **F 530-531**; (AC) **F 531**

Bali, R. E. Buckling of Shallow Spherical Shells—The Significance of the Pole Conditions (BN) **AM 710**

## Ball Bearing Life

Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171**; (D) **L 177**; (AC) **L 178**

## Ball Bearings

Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**

Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180**; (D) (AC) **L 188**

Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**

## Ball Motion

Dynamics of Rolling-Element Bearings—Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) **L 293**; (D) (AC) **L 303**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) **L 305**; (D) (AC) **L 311**; Part III: Ball Bearing Analysis (78-Lub-32) **L 312**; Part IV: Ball Bearing Results (78-Lub-33) **L 319**

Ballal, D. R. Weak Extension Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**

Ballik, E. A. Laminar Fluid Flow Measurements Employing a White Light Fringe Image Velocimeter (WFIV) (BN) **AM 218**

Balta, F. Penetration of a Half Space by a Rectangular Cylinder (79-WA/APM-3) **AM 587**

Bambrough, H. A. Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

Bamford, W. H. Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analyses of Nuclear Reactor Vessels (79-PVP-16) **MT 182**; Fatigue Crack Growth of Stainless Steel Piping in a Pressurized Water Reactor Environment **PVT 73**

## Band Radiation

Band Radiation within Diffuse-Walled Enclosures—Part I: Exact Solutions for Simple Enclosures **HT 81** Part II: An Approximate Method Applied to Simple Enclosures **HT 85**

Banerjee, B. N. Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) **L 275**; (D) (AC) **L 282**

Banerjee, J. K. Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) **I 135**; Part II: The Force Equilibrium **I 141**

Banerjee, S. Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**; A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**; Three-Dimensional Numerical Analysis of Transient Natural Convection in Rectangular Enclosures **HT 114**

Bapu Rao, M. N. Finite Element Analysis of Mindlin Plates (78-WA/DE-6) **MD 619**

Bar-Cohen, A. Fin Thickness for an Optimized Natural Convection Array of Rectangular Fins (TN) **HT 564**; International Trends in Engineering Design Education—A Partial View **MD 540**

Barber, A. R. Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**

Barber, T. J. A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow. Part II—Stagnation Pressure Losses in a Rectangular Elbow (D) (AC) **F 428**

## Bare Rod Bundles

Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**

Barker, R. L. Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Tex-1) **I 59**; Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) **I 54**

Barone, M. R. The Influence of Cure Time Restrictions on

Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

Barrows, J. F. Experimental Investigation of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) **P 52**; (D) **P 59**; (AC) **P 60**

Bartiz, J. G. Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**

## Base Pressure

Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) **AM 483**

Basham, S. J. Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) **P 640**

Bassani, R. The Flow Self-Regulating Hydrostatic Screw and Nut **L 364**

Basu, B. Boundary-Layer Growth in Three Dimensions With Aligned Magnetic Field (BN) **AM 226**

Basu, R. S. Viscosity of Nitrogen near the Critical Point (78-WA/HT-38) **HT 3**; (Er) **HT 575**

## Batch Production

Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**

Bathelt, A. G. Latent Heat-of-Fusion Energy Storage: Experiments on Heat Transfer from Cylinders During Melting (78-HT-47) **HT 453**

Bay, N. Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**

Bayazitoglu, Y. O. Fatigue Analysis of Offshore Structures **ERT 218**

Bayoumi, M. S. Optimization of Power Absorption From Sea Waves **ERT 145**

Baz, A. Optimization of Power Absorption From Sea Waves **ERT 145**

## Beam Equations

Numerical Solution of the Beam Equation With Nonuniform Foundation Coefficient (79-WA/APM-7) **AM 901**

## Beam Theories

Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**

## Beams

Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**

Distributed Damage Theory of Beams in Pure Bending (79-WA/APM-1) **AM 592**

Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**

Eigenfrequencies of Continuous Plates With Arbitrary Number of Equal Spans **AM 656**

Eigenfunctions for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**

Fundamental Frequency of Beams With Elastic Rotational Restraints (TB) **MD 711**

Improved Lower Bounds for Buckling Loads and Fundamental Frequencies of Beams (BN) **AM 696**

Inelastic Bending of Beams Under Time-Varying Moments—A State Variable Approach (79-PVP-82) **PVT 305**

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Field Radii (79-PVP-4) **PVT 249**

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/PROD-6) **I 304**

The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

Optimal Design Using Brittle Materials (BN) **AM 708**

A Remark on Lateral Buckling of a Uniform Beam (BN) **AM 556**

The Role of Saint Venant's Solutions in Rod and Beam Theories **AM 851**

On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 206**

A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**

Transient Response of Continuous Viscoelastic Structural Members **AM 685**

Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**

Beard, J. N., Jr. A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) **I 80**

## Bearing Clearances

Experimental Investigation of Slider Gas Bearings With Ultra-Thin Films **L 510**

## Bearing Friction

A Two-Degree-of-Freedom System With Coulomb Bearing Friction (BN) **AM 217**

## Bearing Performance

Friction and Wear of Sintered Cast Iron Products **L 54**

## Bearings

Adiabatic Solutions for Finite Journal Bearings **L 492**

Amplitude Effects on the Dynamic Performance of Hydrostatic Gas Thrust Bearings **L 437**

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) **L 195**

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145; (D) L 152; (AC) L 153**

Analysis of Misaligned Grooved Journal Bearings **L 503**

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

An Analytical Study of Starved Porous Bearings **L 38**

Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220; (D) L 229; (AC) L 230**

Dynamics of Rolling-Element Bearings—Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) **L 293; (D) (AC) L 303; Bearings—Part II: Cylindrical Roller Bearing Results (78-Lub-26) L 305; (D) (AC) L 311; Part III: Ball Bearing Analysis (78-Lub-32) L 312; Part IV: Ball Bearing Results (78-Lub-33) L 319**

Effects of Disk Flexibility on Shaft Whirl Stability (78-WA-DE-4) **MD 298**

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190; (D) L 198; (AC) L 200**

Exact Two-Dimensional Analysis of Circular Disk Spiral Groove Bearing (Part I) **L 424; (Part II) L 431**

An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) **L 154; (D) L 161; (AC) L 162**

Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171; (D) L 177; (AC) L 178**

Flow in a Whirling Rotor Bearing **AM 787**

Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164; (D) (AC) L 170**

Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (78-Lub-30) **L 338; (D) (AC) L 348; (Er) L 525**

Heat Transfer Characteristics of a Porous Thrust Bearing (TB) **L 531**

High Stiffness Bearing **L 520**

The Hybrid Isothermal Air Lubricated Journal Bearing **L 444**

Lubrication With Micropolar Liquids and Its Application to Short Bearings **L 358**

Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180; (D) (AC) L 188**

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 96**

Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**

Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 99**

An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (78-Lub-27) **L 327; (D) (C) L 337**

A Parametric Study of Journal Bearing Performance: The 80 Deg Partial Arc Bearing **L 488**

Performance of Spherical Gas Bearings in Axisymmetric Operation (TB) **L 240**

Porous Wall Gas Lubricated Journal Bearings: Experimental Investigation **L 488; Theoretical Investigation L 488**

Rolling Element Bearing Vibration Transfer Characteristics: Effect of Stiffness **AM 677**

Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 419; (D) L 423**

Stability Threshold of Flexibly Supported Hybrid Gas Journal Bearings **L 451**

Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**

Steady State Performance of a Hydrodynamic Journal Bearing With a Pseudoplastic Lubricant **L 497**

A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) **L 242**

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129; (D) L 137; (AC) L 138**

A Thermohydrodynamic Analysis of Journal Bearings **L 21**

Beck, J. V. Effects of Multiple Sources in the Contact Conductance Theory **HT 132**

Beckwith, W. F. A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) **L 88**

Bécus, G. A. Elastic Dispersion, Homogeneous Dispersive Media and an Application to Periodic Elastic Media (D) (AC) **AM 236; Low Frequency Bloch Waves for Wave Equations Whose Speed is a Deterministic, or Randomlike, Periodic Function (D) (AC) AM 235**

Bedini, R. Optimal Programming of Working Cycles for Industrial Robots **MD 250**

Behoe, R. D. Heat Transfer Characteristics for In-line and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 528**

Beitscher, S. The Strain-Rate and Temperature Dependence of 18Ni(350) Maraging Steel Tensile Properties **MT 91**

Bejan, A. Heat Transfer by Forced and Free Convection in a Horizontal Channel with Differentially Heated Ends **HT 417; A Study of Entropy Generation in Fundamental Convective Heat Transfer HT 718**

Beitbol, E. F. (author) Compendium of RAM Computer Routines (GR) **MD 175**

Belitzer, A. I. Response of a Rigid Sphere Embedded in an Elastic Medium to Random Disturbances (BN) **AM 951**

Bend Conditions

Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) **ERT 128**

Bending

Distributed Damage Theory of Beams in Pure Bending (79-WA/APM-1) **AM 592**

Inelastic Bending of Beams Under Time-Varying Moments—A State Variable Approach (79-PVP-82) **PVT 305**

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/PROD-6) **L 304**

On Pipeline Bending at the Seabed (TB) **ERT 203**

The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

Bending Fatigue Strength

The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**

Bending Free Shapes

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

Bending Mode Vibrations

Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 50**

Bending Strain

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 7; Part II: Application and Experiment (78-DET-24) MD 89**

Bending Stress

Experimental investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **L 178**

Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**

Bending Waves

Peristaltic Pumping by a Lateral Bending Wave **BE 239**

Benedict, R. P. Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) **P 622; Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) P 572; Subsonic Turbulent Flow Past a Downstream Facing Annular Step (D) F 235; (AC) F 236**

Ber, A. On the Mechanism of Chip Breaking (78-WA/PROD-21) **L 241**

Berger, S. A. Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**

Berglund, J. W. Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**

Berkof, R. S. (editor pro tem) Tribute to C.W. McLarnan (Ed) **MD 361**

Berkowitz, D. A. Design of a Practical Controller for a Commercial Scale Fossil Power Plant **DS 284**

Berkson, M. H. Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 46; Part II: Responses in Compression and Shear; Influence of Gross Morphology BE 53**

Berry, J. T. A Three-Dimensional Finite Element Analysis of the Double-Torsion Test **PVT 328**

Berry, R. A. Heat Transfer Characteristics for In-line and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 528**

Betta, V. Further Contributions to the Study of the Leidenfrost Phenomenon **HT 612**

Betz, H. P. (author) Bibliography on Reliability, Addendum I (GR) **MD 174**

Bhadra, P. A Simplified Method to Account for Plastic Rate Sensitivity With Large Deformations (79-WA/APM-27) **AM 811**

Bhandari, S. K. Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) **M (79-PVP-61) P 270**

Bhaskaran, P. Velocity Exponent for Erosion and Noise Due to Cavitation **F 60**

Bhalla, S. M. Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) **L 391**

Bhatnagar, R. K. Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel **AM 21**

Bhushan, B. A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 407**

Biaxial Stress

Diametral Compressive Testing Method **MT 139**

Bifurcation

Bifurcation of Elastic-Plastic Circular Cylindrical Shells Under Internal Pressure **AM 989**

Bifurcation Load

Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**

Bin Pressures

The Pressure Ratio in the Theory of Bin Pressures (79-WA/APM-13) **AM 524**

Binark, H. Predictions of Induced Air Flows in Hollow Cone Sprays **F 312**

Binder Extrusion

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**

Bingham, D. N. A Constitutive Equation for the Canine Anterior Cruciate Ligament **BE 15**

Biocompatibility

Materials for Human Implantation **BE 2**

Biokinematics

Technology Transfer in Biokinematics of the Human Spine (78-DET-88) **MD 594**

Biological Organ Preservation

The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**

Biological Soft Tissues

Inversion of a Class of Nonlinear Stress-Strain Relationships of Biological Soft Tissues **BE 23**

Biomaterials

Biomaterials, Medical Devices, and Artificial Organs (BR) **MD 363**

Biomechanical Analysis

A Biomechanical Analysis of Head Impact Injuries to Children **BE 250**

Bil, R. C. Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 549**

Bilhardt, C. F. Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **L 319**

Binary Cycles

Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**

Utilizing Geothermal Resources Below 150 C (300 F) **ERT 124**

Birkebak, R. Evaluation of Integrating Sphere Surfaces for Infrared Pyrometers (TN) **HT 379**

Bit Design

Design, Fabrication and Field Test Performance of Slug-Type Diamond Compacts Oil Bits **ERT 41**

**Bjork, O. (author)** Computer-Aided Tolerancing (BR) **Ap 172**

**Bjorkman, G. S., Jr.** Harmonic Holes for Nonconstant Fields (79-APM-30) **AM 573**

**Black, J. T.** Flow Stress Model in Metal Cutting (78-WA/Prod-27) **I 483; (D) (AC) I 415**

**Blackheiser, P. L., Jr.** A Simulation of the Dynamics of Counterpulsation **BE 105**

#### **Blade Angles**

Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 448; (D) P 448; (AC) P 449**

#### **Blade Attachment Region**

Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**

#### **Blade-to-Blade Calculations**

An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**

#### **Blade-to-Blade Flow**

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**

#### **Blade Camber**

A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**

#### **Blade Channel**

Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D) P 39; (AC) P 40**

#### **Blade Flutter**

Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) **P 533**

#### **Blade Optimization**

A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**

#### **Blade Passages**

Thermophoresis—Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) **P 542; (D) P 548; (AC) P 547**

#### **Blade Ratio**

An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D) P 245; (AC) P 248**

#### **Blade Rows**

Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**

Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**

#### **Blade Stresses**

Development of an Inlet for a Tilt Nacelle Subsonic V-STOL Aircraft (78-GT-121) **P 290**

#### **Blade Surface**

The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**

#### **Blade Wake Flow**

Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**

#### **Blades**

Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**

A Fundamental Criterion for the Application of Rotor Casing Treatment **F 237**

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

Turbulent Boundary Layer Heat Transfer on Curved Surfaces **HT 521**

Vibration Frequencies of a Twisted Uniform Blade with One End Spring Hinged and the Other Free (TB) **P 679**

**Blair, M. F.** Turbulent Boundary Layer Heat Transfer on Curved Surfaces **HT 521**

**Blackely, R.** Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

**Belvisi, R. D. (author)** Flow Induced Vibration (BR) **MD 8; Fretting wear of Heat Exchanger Tubes—Part 1: Experiments (78-JPGC-NE-8) P 625; Part II: Models (78-JPGC-NE-9) P 630; (reviewer) Modeling Hydroelastic Vibrations (BR) AM 237**

**Bloch Waves**

Low Frequency Bloch Waves for Wave Equations Whose Speed is a Deterministic, or Randomlike, Periodic Function (D) (AC) **AM 235**

#### **Blood Cell Suspensions**

The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**

#### **Blood Mass Flow Distribution**

Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**

#### **Blood Perfusion**

Blood Perfusion Measurements by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 58**

Thermography as a Means of Blood Perfusion Measurement **BE 246**

#### **Blood Plasmas**

The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**

#### **Blowing Fraction**

The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**

#### **Blowing Rate Range**

On the Nature of Jets Entering a Turbulent Flow Part B—Film Cooling Performance **P 466**

#### **Blunt Circular Cylinder**

Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**

**Boaz, I. B.** Effects of Soil-Structure Interaction on Seismic Response of a Steel Gravity Platform **ERT 171**

**Bodner, S. R.** Analytical Formulation of a Rate and Temperature Dependent Stress - Strain Relation **MT 254; Uniaxial Cyclic Loading of Elastic-Viscoplastic Materials (78-WA/APM-30) AM 805**

#### **Body-Fixed Frames**

Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) **AM 925**

#### **Body Postures**

Human Factors in Machine Design (78-DET-68) **MD 587**

**Boehm, R. F.** Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**

**Bohm, G. J.** Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

#### **Boiler Tube Metals**

Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-solids Fluidized-Bed Coal Combustor (77-WA/CD-1) **P 1; (D) P 7; (AC) P 8**

#### **Boilers**

Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Slicker-Fired Boiler (78-WA/Fu-4) **P 592**

The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**

Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615; (D) (AC) P 619**

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 500**

#### **Boiling**

An Analytical Estimate of the Microlayer Thickness in Nucleate Boiling (TN) **HT 186**

Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**

Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**

On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 288**

A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (TN) **HT 178; (Er) HT 375**

Nucleation Processes in Large Scale Vapor Explosions **HT 280**

Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) **HT 381**

Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**

**Boiling Boundary**

The Propagation of Boiling Boundary Phase-Change Fronts in Moving Fluids (78-WA/FE-18) **F 270**

#### **Boiling Burnout**

On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**

#### **Boiling Flow**

Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 61**

#### **Bolt Fatigue**

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

#### **Bolt-Flange Assembly**

Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**

#### **Boiled Joint Integrity**

Study of Boiled Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9; Part II: Applications (77-WA/NE-7) P 16**

**Bonacina, C.** Dropwise Evaporation **HT 441**

#### **Bond Graph Technique**

Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) **MD 258**

#### **Bond Graphs**

Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**

Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 50**

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) **MD 693**

State Variables and Pseudo Bond Graphs for Compressible Thermofluid Systems **DS 201**

**Bondi, A. A.** Reliability as a Materials Property (78-WA/Mat-1) **MT 27; (D) MT 177**

#### **Bonding Surface**

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**

#### **Bone Fatigue Strength**

The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**

#### **Bone Motion**

The Effect of Soft Tissue on Measurements of Vibrational Bone Motion by Skin-Mounted Accelerometers **BE 218**

**Book, W. J.** Analysis of Massless Elastic Chains With Servo Controlled Joints **DS 187**

#### **Book Reviews**

Biomaterials, Medical Devices, and Artificial Organs **MD 363**

The Boundary Element Method **AM 718**

Catastrophe Theory: Selected Papers 1972-77 **AM 237**

Commande et Regulation par Calculateur Numerique **DS 179**

Computer Aided Tolerancing **Ap 172**

Continuum Mechanical and Statistical Approaches in the Mechanics of Granular Materials **AM 967**

Emerging Energy Technologies **ERT 206**

Finite Element Analysis in Fluid Dynamics **AM 966**

Flow Induced Vibration **MD 6**

Formulas for Stress and Strain—5th Edition **MD 173**

Foundations of Theoretical Mechanics **AM 718**

Fracture Mechanics **AM 967**

Handbook of Turbulence, Volume 1 **AM 237**

Introduction to Fluid Logic **DS 83**

Les instabilities hydrodynamiques en convection libre, forcée et mixte **AM 968**

Mathematical Models for the Study of the Reliability of Systems (BR) **Ap 172**

Mining Technology for Energy Resources: Advances for the Eighties (BR) **ERT 206**

Modeling Hydroelastic Vibrations **AM 237**

Nichtlineare Schwingungen **AM 238**

Numerical Methods in Laminar and Turbulent Flows **AM 967**

The Numerical Treatment of Integral Equations **AM 969**

Ocean Thermal Energy Conversion **ERT 206**

The Physics of Vibration: Part 1—The Simple Classical Vibrator **AM 966**

Statistical Energy Analysis of Dynamical Systems: Theory and Application **Ap 172**

Stress Analysis of Notch Problems **AM 968**

The Theory of Elastic Waves and Waveguides **AM 969**

Vibrations and Stability of Multiple Parameter Systems **AM 719**

Wear, Treatise on Material Science and Technology **AM 968**

**Booker, J. F.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (D) **L 198; (AC) L 200; Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) L 74**

**Boon, R. W.** Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**

#### **Borehole Failure**

Failure of Inclined Boreholes (78-Pet-44) **ERT 232**

**Borgmeyer, M. E.** Transport of Oils as Oil-in-Water Emulsions (77-FE-26) **F 100**

#### **Boring Bars**

Development of a Hydraulic Chambered, Actively Controlled



- Boring Bar **I 362**
- Borfo, R. W. Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) **P 607**; The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 500**
- Bornstein, B. Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**
- Bornstein, M. S. Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**
- Bosman, C. A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**
- Bosma, R. Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (D) **L 137**; (AC) **L 138**
- Bottom Ash  
Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**
- Boundary Conditions  
An Analytical Study of Starved Porous Bearings **L 38**  
On the Barber Boundary Conditions for Thermoelastic Contact (79-WA/APM-33) **AM 849**  
A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**  
A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**  
On the Determination of Stresses, Displacements, and Stress-Intensity Factors in Edge-Cracked Sheets With Mixed Boundary Conditions **AM 611**  
The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 328**  
Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**  
Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231**; (D) **L 238**; (AC) **L 239**  
Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**  
The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/APM-16) **AM 618**  
Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**  
Eigenvalues for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 188**  
Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**  
Hydromagnetic Flow Over a Conducting Thick Porous Plate With Hall Effects (BH) **AM 220**  
An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**  
An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**  
Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity **HT 227**  
A New Formulation for Computational Fluid Dynamics **F 453**  
Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**  
A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**  
Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**  
Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) **ERT 105**  
Stability of a Horizontal Porous Layer with Time-Periodic Boundary Conditions **HT 244**  
A Study of Cold Strip Rolling **MT 129**  
A Study of Penetrative Convection in Rotating Fluid **HT 281**  
The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-96) **ERT 240**  
Thin Disk On a Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 348**  
Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**  
Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**
- Boundary-Integral Equations  
The Boundary Element Method (BR) **AM 718**
- Boundary Layer Analysis Techniques  
Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**
- Boundary-Layer Concept  
Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) **AM 183**
- Boundary Layer Flow  
Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**
- Boundary-Layer Growth  
Boundary-Layer Growth in Three Dimensions With Aligned Magnetic Field (BN) **AM 226**
- Boundary Layer Parameters  
Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) **P 572**
- Boundary Layer Thickness  
Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**  
Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**
- Boundary Layers  
Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**  
An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233**; (D) **P 245**; (AC) **P 248**  
Calculation of a Turbulent Boundary Layer Downstream of a Step Change in Surface Temperature **HT 144**  
Combined Heat and Mass Transfer in Regenerators with Hydroscopic Materials **HT 205**  
Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**  
Experimental Investigation of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) **P 52**; (D) **P 58**; (AC) **P 60**  
Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**  
A Hybrid Marching Integration Procedure for the Prediction of Two-Dimensional Supersonic Boundary Layers (D) (AC) **F 400**  
An Integral Method for Calculating Turbulent Boundary Layer With Separation **F 110**  
Laminar Boundary Layer on a Finite Disk in a Rotating Compressible Isothermal Flow **F 166**  
Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers **HT 151**  
On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction **P 459**; Part B—Film Cooling Performance **P 468**  
Nucleation Processes in Large Scale Vapor Explosions **HT 280**  
REVIEW—Unsteady Boundary Layers, Separated and Attached **F 29**  
Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23**; (D) **P 29**; (A) **P 30**  
The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**  
Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) **F 230**; (D) **F 235**; (AC) **F 236**  
Three-Dimensional Structure of a Nominally Planar Turbulent Boundary Layer **F 326**  
Turbulent Boundary Layer Heat Transfer on Curved Surfaces **HT 521**  
Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**  
Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water **HT 313**
- Boundary Loadings  
Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**
- Boundary Lubricated Conditions  
Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**
- Boundary Lubrication  
A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 185**  
A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 407**
- Boundary Propagation  
The Propagation of Boiling Boundary Phase-Change Fronts in Moving Fluids (78-WA/FE-18) **F 270**
- Boundary-Value Problems  
Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 203**
- Bounded Pulsatile Jet  
Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141**; (D) **BE 149**; (AC) **BE 150**
- Bounding Surfaces  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**
- Bounding Theorems  
The Development of High Temperature Design Methods Based on Reference Stresses and Bounding Theorems **MT 349**
- Bourgin, P. Fluid-Film Flows of Differential Fluids of Complexity  $n$  Dimensional Approach—Applications to Lubrication Theory **L 140**
- Bovine Cortical Bone  
The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**
- Bowen, C. W. (author) Mode of Failure Investigations of Helicopter Transmissions (GR) **MD 178**
- Bowling Balls  
On the Dynamics of a Weighted Bowling Ball (79-WA/APM-17) **AM 937**
- Bowman, B. M. A Biomechanical Analysis of Head Impact Injuries to Children **BE 250**
- Boyd, W. K. Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**; Erosion-Corrosion Effects on Boiler Tube Metals in a Multisolid Fluidized-Bed Combustor (77-WA/CD-1) **P 1**; (D) **P 7**; (AC) **P 8**
- Bradley, W. B. (editor) Emerging Energy Technologies (BR) **ERT 206**; Failure of Inclined Boreholes (78-Pet-44) **ERT 232**
- Boysan, F. Predictions of Induced Air Flows in Hollow Cone Sprays **F 312**
- Bracegirdle, P. Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (D) **P 29**; (AC) **P 30**
- Brakes  
Wear and Thermal Processes in Asbestos-Reinforced Friction Materials **L 481**
- Branch Points  
Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube **HT 23**
- Branched Systems  
On the Torsional Vibration of Branched Systems Using Extended Transfer Matrix Method (77-WA/DE-4) **MD 548**
- Brandt, H. Dynamic Response of a Cylindrical Shell in a Potential Flow (79-WA/APM-22) **AM 772**
- Braun, S. Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**
- Brazil, R. Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**
- Brebbia, C. A. (author) The Boundary Element Method (BR) **AM 718**; (editor) Numerical Methods in Laminar and Turbulent Flows (BR) **AM 967**
- Breeder Reactors  
A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) **P 647**
- Brennen, C. Gravity Flow of Granular Materials in Conical Hoppers (79-WA/APM-20) **AM 529**
- Brewer, D. E. Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231**; (D) **L 238**; (AC) **L 239**
- Brief Notes  
Amplitude-Frequency Characteristics of Large-Amplitude Vibrations of Sandwich Plates **AM 230**  
Axisymmetric Torsional Vibration of Conical Shells **AM 699**  
Boundary-Layer Growth in Three Dimensions With Aligned Magnetic Field **AM 226**  
Buckling of Angle-Ply Laminated Circular Cylindrical Shells **AM 233**  
Buckling of Shallow Spherical Shells—The Significance of the Pole Conditions **AM 710**  
On a Class of Modes Defined by Rosenberg **AM 703**  
Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube **AM 223**  
On the Damped Oscillations of a Weakly Nonlinear Pendulum **AM 213**  
Dynamic Crack-Tip Fields According to Deformation Theory **AM 787**  
Dynamics of a Wobbling Symmetric Disk **AM 711**  
Energy Variations in Notch Stress Analysis **AM 952**  
Fluid Temperature and Mixed Convection Effects in Hot-



Wire Measurements of Natural Convection Flows **AM 231**  
 Free Energy of Granular Materials in Static Equilibrium **AM 944**  
 Homogenization for Transient Heat Conduction **AM 945**  
 A Hybrid Problem in Plate Elasticity (BN) **AM 714**  
 Hydromagnetic Flow Over a Conducting Thick Porous Plate With Hall Effects **AM 220**  
 Improved Lower Bounds for Buckling Loads and Fundamental Frequencies of Beams **AM 696**  
 Initial Postbuckling of Three-Hinged Circular Arch **AM 954**  
 An Interpolation Scheme for Plastic Yield Criteria **AM 701**  
 The Laminar Flat Radial Jet of an Incompressible Power Law Fluid **AM 210**  
 Laminar Fluid Flow Measurements Employing a White Light Fringe Image Velocimeter (WFIV) **AM 210**  
 Large Strain Solution for Pressurized Elastoplastic Tubes **AM 226**  
 Linearization Equations for Vibration Induced by Oscillatory Flow **AM 946**  
 Lubrication Flow of a Particle-Fluid Mixture **AM 211**  
 A Membrane of Revolution Loaded by Hydrostatic Pressure **AM 948**  
 Nonlinear Vibration of Rectangular Plates **AM 215**  
 Note on Apex Singularities of a Wedge-Shaped Crack Under All Modes **AM 705**  
 Optimal Design Using Brittle Materials **AM 708**  
 Optimum Linear Tapering in the Design of Columns **AM 956**  
 Propagation of Elastic Waves in Rods With Variable Cross Section **AM 951**  
 A Remark on Lateral Buckling of a Uniform Beam **AM 698**  
 Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids **AM 958**  
 Response of a Rigid Sphere Embedded in an Elastic Medium to Random Disturbances **AM 951**  
 Sphere on Imperfectly Rough Sloping Plane **AM 713**  
 Symmetrical Velocity Profiles for Jeffery-Hamel Flow **AM 214**  
 A Two-Degree-of-Freedom System With Coulomb Bearing Friction **AM 217**  
 Upper Bounds for Amplitudes of Harmonic Components of Excitation **AM 716**  
 Uniqueness of Plane Strain Deformation of Rigid-Plastic Solids Under Lateral Pressure **AM 959**  
 Yield Surface Characteristics Arising From Orthorhombic Symmetry **AM 981**  
 Brindley, J. Flow in a Whirling Rotor Bearing **AM 767**  
**Brittle Fracture**  
 Acoustic Emission From a Brief Crack Propagation Event **AM 107**  
 Diametral Compressive Testing Method **MT 139**  
**Brittle Materials**  
 Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**  
 Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 168**  
 Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) **ERT 34**  
 Optimal Design Using Brittle Materials (BN) **AM 708**  
 Brock, J. E. A Remark on Lateral Buckling of a Uniform Beam (BN) **AM 698**  
 Sphere on Imperfectly Rough Sloping Plane (BN) **AM 713**  
 Brookman, E. T. Swirling Flow Through Annular Diffusers With Conical Walls **F 224**  
 Brown, D. G. Power Extraction From Ocean Surfaces Waves **ERT 141**  
 Brown, D. J. The Interaction of Solid or Liquid Particles and Turbulent Fluid Flow Fields—A Numerical Simulation **F 265**  
 Brown, F. (author) AMSEC Users Guide (GR) **MD 174**  
 Brown, H. W. A Reliable Spline Coupling (78-WA/Aero-11) **I 421**  
 Brown, R. H. Mechanical Behavior of Metals in Dynamic Compression **MT 238**  
 Brown, T. D. Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615; (D) (AC) P 619**  
 Brown, T. W. Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) **P 250**  
 Browne, L. W. B. Calculation of a Turbulent Boundary Layer Downstream of a Step Change in Surface Temperature **HT 144**  
 Bruhn, H. D. (author) Aquatic Plant Harvesting—Development of High-Speed Harvesters and Process-

ing and Utilization of Harvested Vegetation (GR) **MD 366**  
 Bryan, J. B. Computational Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**  
 Bryers, R. W. Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) **P 506**  
 Bryson, A. E., Jr. Some Connections Between Modern and Classical Control Concepts **DS 91**  
 Brzeski, L. High Stiffness Bearing **L 520**  
 Buchheim, R. Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**  
**Buckled Cylinders**  
 Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **I 178**  
 Buckley, D. H. Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (D) **L 206; (AC) L 267**  
**Buckling Load**  
 Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 203**  
**Buckling**  
 Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**  
 Buckling of Rectangular Cross-Ply Laminated Plates With Nonlinear Stress-Strain Behavior **AM 637**  
 Buckling of Shallow Spherical Shells—The Significance of the Pole Conditions (BN) **AM 710**  
 Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**  
 Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**  
 Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**  
 Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) **PVT 216**  
 Elastic and Elastic-Plastic Buckling of Internally Pressurized 2:1 Ellipsoidal Shells (ER) **PVT 112**  
 Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**  
 Improved Lower Bounds for Buckling Loads and Fundamental Frequencies of Beams (BN) **AM 696**  
 Plane-Strain Buckling of a Crack in a Harmonic Solid Subjected to Crack-Parallel Compression (78-WA/APM-4) **AM 597**  
 A Remark on Lateral Buckling of a Uniform Beam (BN) **AM 698**  
 Squaresness-Under-Load Testing and Buckling of Springs (TB) **MD 315**  
 Bul-Quoc, T. An Engineering Approach for Cumulative Damage in Metals Under Creep Loading **MT 337**  
**Building Components**  
 Response of Building Components to Heating in a Fire **HT 365**  
**Bulge Tests**  
 Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/PROD-42) **I 341**  
 Bullock, R. O. First Order Pump Surge Behavior (D) **F 530-531; (AC) F 531**  
**Bulk Solids**  
 Plug Flow of Bulk Solids Using Gas Pressure Control **I 85**  
 Bunditkul, S. Laminar Transport Phenomena in Parallel Channels with a Short Flow Constriction **HT 217**  
**Buoy-Cable Systems**  
 Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) **I 416**  
**Buoyancy**  
 Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**  
**Buoyancy-Induced Flow**  
 Buoyancy-Induced Fluid Motions Characteristic of Applications in Technology—The 1978 Freeman Scholar Lecture **F 5**  
 Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 660**  
**Buoyant Cylinders**  
 Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (76-Pet-11) **ERT 167**  
**Buoyant Forces**  
 Power Extraction From Ocean Surfaces Waves **ERT 141**  
 Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**  
 Bupara, S. S. Adiabatic Solutions for Finite Journal Bearings **L 492; Analysis of Misaligned Grooved Journal Bearings L 503**

Burdick, G. (author) Collection of Methods for Reliability and Safety Engineering (GR) **MD 175**  
**Buried Pipelines**  
 Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) **PVT 21**  
 A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **PVT 44**  
 Burmeister, L. C. Triangular Fin Performance by the Heat Balance Integral Method (TN) **HT 562**  
 Burney, F. A. Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/PROD-16) **I 264**  
**Burning Rates**  
 Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**  
**Burnout Data**  
 Correlation of Burnout Data for Disk Heaters Cooled by Liquid Jets (TN) **HT 383**  
 Burns, D. J. Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**  
 Burns, J. J., Jr. Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 222**  
**Burst Testing**  
 Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 165**  
 Burton, D. E. Computational Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**  
 Burton, R. A. An Analysis of the Flow of Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (D) **L 152; (AC) L 153; Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) L 275; (D) (AC) L 282; Hydrodynamic Effects in a Misaligned Radial Face Seal (D) L 290; (AC) L 291; Observation of Self-Excited Wobble in Face Seals (TB) L 526; Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) L 419; (D) L 423**  
 Bush, A. W. Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**  
 Bushnell, D. M. Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**  
 Bussert, B. W. The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**  
 Butkovich, T. R. Computational Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**  
 Butler, R. G., II Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) **ERT 167**  
 Butters, S. W. Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**  
 Burton, O. E., Jr. Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**  
 Bynum, J. E. Remaining Creep or Stress-Rupture Life Under Nonsteady Temperature and Stress **MT 331**

## C

**Cable Systems**  
 Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) **I 416**  
**Cage Motion**  
 Dynamics of Rolling-Element Bearings—Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) **L 293; (D) (AC) L 303; Part II: Cylindrical Roller Bearing Results (78-Lub-26) L 305; (D) (AC) L 311; Part III: Ball Bearings Analysis (78-Lub-32) L 312; Part IV: Ball Bearing Results (78-Lub-33) L 319**  
**Calculation Method**  
 An Axon Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D) P 245; (AC) P 248**  
 A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**  
 Calculation Method for Residual Stress Analysis of Filament-Wound Spherical Pressure Vessels (GR) **MD 174**  
 Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**  
 The Statistical Nature of Fatigue Crack Propagation **MT 148**

### Computational Modeling

Calculation of Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**

### Calculation Procedure

A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow. Part I—Inviscid Flow Considerations (79-WA/FE-4) **F 415**

### Calibration

The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**

Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

### Calibration Procedure

Pressure Instrumentation for Gas Turbine Engines—a Review of Measurement Technology (78-GT-148) **P 373**

Callagrone, J. P. Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) **HT 171**; Stability of a Horizontal Porous Layer with Time-Periodic Boundary Conditions **HT 244**

### Cam Manufacturing Methods

A Survey of Cam Manufacturing Methods (78-DET-65) **MD 455**

### Cam Manufacturing

Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108**

Dynamic Accuracy of Profiling Mechanisms in Cam Manufacturing (D) **MD 519**

### Cam Plastometer

A Tabular Summary of Some Experiments in Dynamic Plasticity **MT 231**

### Cams

Design Charts for Disk Cams with Reciprocating Radial Roller Followers (78-DET-36) **MD 465**

Cameron, A. An Analysis of the Flow of a Viscous Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (D) **L 152**; (AC) **L 153**; Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 99**; An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (78-Lub-27) **L 337**; (D) (AC) **L 337**

Campbell, J. D. Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate **MT 248**

### Cancer Therapy

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

### Canine Anterior Cruciate Ligament

A Constitutive Equation for the Canine Anterior Cruciate Ligament **BE 15**

### Canine Shoulder

Determining the In-Vivo Areas of Contact in the Canine Shoulder **BE 271**

### Canilivered Beams

Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) **AM 45**

Eigenvalues for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**

The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

### Canilivered Plates

Exact Equations for the Inextensional Deformation of Canilivered Plates (79-WA/PM-11) **AM 631**

### Capacity Ratings

Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**

### Capital Cost System

Capital Cost System Optimization of OTEC Power Modules **ERT 74**

### Car Dumper Systems

Rotary Car Dumper Systems **I 90**

### Car Gas Turbine

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

### Car-Trailer Stability

Application of Sensitivity Analysis to Car-Trailer Stability (TB) **DS 272**

Carballada, B. L. Two Dimensional Lateral Flow Past a Barrier (79-WA/FE-14) **F 449**

### Carbide Cutting Tools

On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**

### Carbide Tools

An Analysis of Thermal Cracking of Carbide Tools in Intermitent Cutting (78-WA/PROD-22) **I 159**

Failure of Cemented Carbide Tools When Executing Intermitent Cuts (78-WA/Prod-17) **I 391**

### Carbides

Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/PROD-26) **I 285**

### Carbon

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

### Carbon Dioxide

Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**

### Carbon Plate Steel

The Influence of Inclusions on the Toughness and Fatigue Properties of A516-70 Steel **MT 265**

### Carbon Steel

Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**

### Carburizing Steels

Effect of Metal Composition on Carburizing of Steels (TB) **MT 173**

### Cardiovascular System

A Simulation of the Dynamics of Counterpulsation **BE 105**

Carey, G. F. (reviewer) Finite Element Analysis in Fluid Dynamics (BR) **AM 968**

Carlson, H. Squareness-Under-Load Testing and Buckling of Springs (TB) **MD 315**

Carlson, R. D. Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 276**

### Carpal Mechanics

Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**

Carr, L. W. Water Tunnel Visualizations of Dynamic Stall **F 376**

Carroll, M. M. Reflection and Transmission of Circularly Polarized Elastic Waves of Finite Amplitude (79-WA/PM-31) **AM 867**

Carson, W. L. Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**; Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4BR (78-DET-39) **MD 238**

### Cartilage Matrix

A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 185**

Cary, A. M. Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**

### Cascades

Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) **P 533**

Application of Nonresonant Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**

Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305**; (D) **P 313**; (AC) **P 314**

### Casings

A Fundamental Criterion for the Application of Rotor Casing Treatment **F 237**

### Cast Iron Products

Friction and Wear of Sintered Cast Iron Products **L 54**

### Cast Steel

Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement **MT 98**

Castelli, V. Experimental Investigation of Slider Gas Bearings With Ultra-Thin Films **L 519**; Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**

### Catastrophe Theory

Catastrophe Theory: Selected Papers 1972-77 (BR) **AM 237**

Catton, I. Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**

Caulk, D. A. The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

### Cavitation

The Effect of Gaseous Cavitation on Fluid Transients **F 79**

Jet Pump Cavitation With Ambient and High Temperature Water **F 93**

Velocity Exponent for Erosion and Noise Due to Cavitation **F 69**

### Cavities

Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids (BN) **AM 958**

### Cavity Flow

Compressibility Effects in Cavity Flows **F 53**

### Cells

Investigation of Freezing of Salt Solutions in Cells **HT 459**

### Cemented Carbides

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**

Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/PROD-26) **I 285**

### Center-Point Circles

On the Existence of Circle-Point and Center-Point Circles for Three-Precision-Point-Dyad Synthesis (78-DET-44) **MD 554**

### Central Nervous System Defects

Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**

### Central Solar Receiver

Structural Design of a Superheater for a Central Solar Receiver (78-WA/PVP-1) **PVT 2**

### Central Station Main Condensers

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**

### Centrally Preloaded Rotors

Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**

### Centrifugal Compressor

Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

### Centrifugal Compressor Performance

A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384**; (D) **P 392-394**; (AC) **P 395**

### Centrifugal Compressor Rotors

Fluid Dynamic Excitation of Centrifugal Compressor Rotor Vibrations (D) **F 401**; (AC) **F 402**

### Centrifugal Compressor Surging

Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**

### Centrifugal Effects

Centrifugal Effects in Hydrostatic Porous Thrust Bearing (TB) **L 381**

### Centrifugal Fans

A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) **P 670**

### Centrifugal Impeller

Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33**; (D) **P 39**; (AC) **P 40**

### Ceramic Design Methodology

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

### Ceramic Heat Exchangers

A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 270**

### Ceramic Seal System

Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 549**

### Ceramics

Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) **P 556**; (D) **P 562**

Chadwick, W. R. Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) **P 533**

### Chain Models

Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 181**

### Chains

Analysis of Massless Elastic Chains With Servo Controlled Joints **DS 187**

### Chamber Inner Walls

Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**

Chambers, W. L. Creep Failure Criteria for High Temperature Alloys **MT 374**

Chan, A. M. C. A Numerical Study of Three-Dimensional

- Roll Cells within Rigid Boundaries **HT 233**; Three-Dimensional Numerical Analysis of Transient Natural Convection in Rectangular Enclosures **HT 114**
- Chan, J. H. C.** Laminar Fluid Flow Measurements Employing a White Light Fringe Image Velocimeter (WFI) (BN) **AM 218**
- Chan, K. C.** A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**
- Chandran, K. B.** Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**
- Chang, C.-H.** Axisymmetric Torsional Vibration of Conical Shells (BN) **AM 699**
- Chang, D. C.** The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**
- Chang, E. H.** Comparative Study of the Linear and Non-Linear Locomotive Response **DS 263**
- Chang, J.-D. (author)** Mechanical Component Failure Prognosis Study (GR) **MD 175**
- Chang, K. J.** Inelastic Bending of Beams Under Time-Varying Moments—A State Variable Approach (79-PVP-82) **PVT 305**
- Chang, T. Y.** Implosion Analysis of Concrete Cylindrical Vessels (TB) **PVT 98**
- Chang, Y. P.** Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**; Three-Dimensional Steady-State Heat Conduction in Cylinders of General Anisotropic-Media **HT 548**
- Chang, Y. W.** Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**
- Change Point Configuration**  
A Reassessment of Grashof's Criterion (TB) **MD 515**
- Channel Design**  
A Generalized Procedure for the Design and Optimization of Fluted Gregory Condensing Surfaces **HT 335**
- Channel Flow**  
Numerical Simulation of Particulate Motion in Turbulent Gas-Solid Channel Flow (76-WA/FE-37) **F 319**
- Channel Stability**  
Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31**
- Chapman, F. M. Jr.** Fatigue Analysis of Offshore Structures **ERT 218**
- Charmchi, M.** Flow through Successive Enlargement, Turning, and Contraction—Pressure and Fluid Flow Characteristics (TN) **HT 554**
- Charrier-Mojtabi, M. C.** Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) **HT 171**
- Chatter Control**  
Development of a Hydraulic Chambered, Actively Controlled Boring Bar **I 362**
- Cheatham, J. B., Jr.** Effects of Strain Hardening on Rock/Bit-Tooth Interaction (77-Pet-70) **ERT 53**; A Study of Factors Influencing the Drillability of Shales: Single-Cutler Experiments with STRATAPAX® Drill Blanks **ERT 189**; Technical Editor's Page **ERT 209**
- Chebyshev Approximations**  
Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**
- Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**
- Chen, A. S. (author)** Bibliography on Reliability. Addendum I (GR) **MD 174**
- Chemical Reactivity**  
A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 270**
- Chen, C. C.** Ductile Fracture in Axisymmetric Extrusion and Drawing—Part 1: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23**; Ductile Fracture in Axisymmetric Extrusion and Drawing—Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 38**; Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid (TN) **HT 566**
- Chen, C. H.** On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets (78-HT-21) **HT 532**
- Chen, C. J.** On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets (78-HT-21) **HT 532**
- Chen, E. P.** Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) **PVT 207**
- Chen, F. Y.** Dynamic Accuracy of Profiling Mechanisms in Cam Manufacturing (D) **MD 519**
- Chen, R. Y.** Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 309**
- Chen, S. S.** Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 108**
- Chen, T. S.** Mixed Convection on Inclined Surfaces (78-WA/HT-46) **HT 422**
- Chen, T. W.** Linearization Equations for Vibration Induced by Oscillatory Flow (BN) **AM 948**
- Chen, W. F.** Implosion Analysis of Concrete Cylindrical Vessels (TB) **PVT 98**
- Cheng, H. S.** Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220**; (D) **L 229**; (AC) **L 230**
- Cheng, K.-M.** Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) **PVT 21**
- Cheng, P.** Natural Convection in a Multi-Layered Geothermal Reservoir **HT 411**; Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 660**
- Cheng, S.** Elasticity Theory of Plates and a Refined Theory **AM 644**
- Cheng, S. C.** Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) **HT 381**
- Cherches, D. B.** A Dynamics Simulation for a High Speed Magnetically Levitated Guided Ground Vehicle **DS 223**
- Chhatlall, S.** Hydromagnetic Flow Over a Conducting Thick Porous Plate With Hall Effects (BN) **AM 220**
- Chhuon, B.** Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**
- Chiang, T.** Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**
- Childs, D. W.** Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) **MD 640**
- Chin, W. C.** Airfoil Design in Subcritical and Supercritical Flows **AM 761**; On the Design of Thin Subsonic Airfoils **AM 6**
- Chip Breaking**  
On the Mechanism of Chip Breaking (78-WA/PROD-21) **I 241**
- Chisholm, D.** Two-Phase Flow on the Shell-Side of a Segmentally Baffled Shell-and-Tube Heat Exchanger (77-WA/HT-22) **HT 38**
- Cho, C.** Transient Freezing of Liquids in Turbulent Flow inside Tubes **HT 465**
- Cho, U. W.** Creep of Metals and Plastics Under Combined Stresses. A Review **MT 365**
- Choros, J.** A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**
- Chou, C. C.** Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 203**
- Chou, T.-W.** Green's Functions for Two-Phase Transversely Isotropic Materials **AM 551**
- Chow, W. L.** Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) **AM 483**; Inviscid Solution for the Problem of Free Overfall **AM 1**
- Christensen, R. M.** Isotropic Properties of Platelet-Reinforced Media **MT 299**
- Chromium**  
Materials for Human Implantation **BE 2**
- Chu, C.-C.** Bifurcation of Elastic-Plastic Circular Cylindrical Shells Under Internal Pressure **AM 889**
- Chung, B. T. F.** A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection **HT 592**
- Chung, J. S.** Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) **ERT 167**
- Chung, T. J. (author)** Finite Element Analysis in Fluid Dynamics (BR) **AM 966**
- Circle-Point Circle**  
On the Existence of Circle-Point and Center-Point Circles for Three-Precision-Point-Dyad Synthesis (78-DET-44) **MD 554**
- Circular Anvils**  
Diametral Compressive Testing Method **MT 139**
- Circular Arches**  
Initial Postbuckling of Three-Hinged Circular Arch (BN) **AM 954**
- Circular Arcs**  
Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**
- Circular Couette Flow**  
The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**
- Circular Cracks**  
A Circular Crack Under Asymmetric Loads and Some Related Integral Equations (79-WA/APM-12) **AM 821**
- Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) **PVT 207**
- Circular Cylinder**  
Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 106**
- Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (ER) **HT 375**
- Circular Cylinder Coordinates**  
Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**
- Circular Cylinders**  
Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression **AM 883**
- Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 705**
- Unsteady Mixed Convection Heat Transfer from a Horizontal Circular Cylinder **HT 126**
- Circular Cylindrical Shells**  
Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**
- Circular Disks**  
Exact Two-Dimensional Analysis of Circular Disk Spiral Groove Bearing (Part II) **L 431**
- Circular Elastic Ring**  
Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**
- Circular Plates**  
Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**
- Finite Element Analysis of Mindlin Plates (78-WA/DE-6) **MD 619**
- Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**
- Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**
- Circular Saws**  
A Feedback Vibration Controller for Circular Saws **DS 44**
- Circular Shafts**  
A New Key and Keyway Design (78-WA/DE-7) **MD 338**
- Circular Tubes**  
Convective Heat Transfer of Laminar Droplet Flow in Thermal Entrance Region of Circular Tubes **HT 480**
- Circularity**  
Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Tex-1) **I 59**
- Circulatory Path-Physiological Situations**  
Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**
- Cladding Tubes**  
An Analysis of the Rupture Behavior of Pressurized Fast Reactor Cladding Tubes Subjected to Thermal Transients **MT 293**
- Clamped Beam**  
Clamped Beam Parametric Amplifier (79-APM-9) **AM 187**
- Classical Compensator**  
Some Connections Between Modern and Classical Control Concepts **DS 81**
- Classical Vibrators**  
The Physics of Vibration: Part 1—The Simple Classical Vibrator (BR) **AM 966**
- Clausen, C. W.** Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) **HT 376**
- Clegg, D. B.** Reflections on Some Aspects of Lubrication of Concentrated Line Contacts (TB) **L 528**
- Climatic Effects**  
The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-86) **ERT 240**
- Closed Cycle Recovery**  
An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**



### Closed-Form Numerical Algorithms

A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**

### Closed-Form Solutions

Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 203**

Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) **DS 31**

### Closed Loop Control

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64; (D) DS 69; (AC) DS 70**

### Closed Loop Dynamic Systems

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 467**

Clossmann, P. J. Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 20**

Cloud, G. L. Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**

### Clutch Technology

Advanced Overrunning Clutch Technology (GR) **MD 366**

### Clutches

Wear and Thermal Processes in Asbestos-Reinforced Friction Materials **L 481**

### Coal

Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) **P 586**

### Coal Ash

Effect of Composition on Melting Behavior of Coal Ash (78-WA/CD-2) **P 497**

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 500**

### Coal Combustion

Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) **I 65**

### Coal Fired Power Plants

Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**

### Coal Gasification

Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**

### Coal-Gasification Pilot Plant

Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**

### Coal Ignition

Critical Regimes of Coal Ignition (78-JPGC/Fu-1) **P 576**

### Coal Preparation Facility

Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **I 223**

### Coaxial Jet

Velocity Characteristics of a Confined Coaxial Jet (79-WA/FE-9) **F 521**

### Cobalt

Materials for Human Implantation **BE 2**

Cocks, A. C. F. Reference Stress and Temperature for Nonisothermal Creep of Structures **AM 795**

Coelho, C. A. D. Compensation of the Speed Governor of a Water Turbine by the Method of Inequalities **DS 205**

Cohen, H. A Two-Degree-of-Freedom System With Coulomb Bearing Friction (BN) **AM 217**

### Coils

Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**

Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**

### Cold Pressure Welding

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**

### Cold Strip Rolling

A Study of Cold Strip Rolling **MT 129**

### Coal-working

The Residual Strain Distribution Around a Fastener Hole Coldworked With a Tube Expander (TB) **MT 304**

### Collapse Pressures

Plastic Collapse of Thin Internally Pressurized Torspherical Shells **PVT 311**

### Collected Ash

Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**

Collins, R. L. Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 300**

Colpin, J. Propagation of Inlet Flow Distortions through

an Axial Compressor Stage (78-GT-34) **P 116**

### Column Design

Optimum Linear Tapering in the Design of Columns (BN) **AM 956**

### Column Properties

Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**

Colewell, W. H. Experimental Investigation of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) **P 52; (D) P 59; (AC) P 80**

### Combined Stresses

Creep of Metals and Plastics Under Combined Stresses, A Review **MT 365**

### Combined Torsional and Telescopic Shear

Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**

### Combustion

Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**

Response of Building Components to Heating in a Fire **HT 365**

Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615; (D) (AC) P 519**

Thermophoresis—Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) **P 542; (D) P 546; (AC) P 547**

### Combustion Chamber Flows

Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**

### Combustion Engines

Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**

### Combustion Gases

A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 270**

### Combustion Process

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64; (D) DS 69; (AC) DS 70**

### Combustion Systems

Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed **HT 397**

### Combustion Systems

Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**

### Combustor Liner

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

### Combustor Liner Temperatures

Alternative Aircraft Fuels (78-GT-59) **P 155**

### Combustors

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**

Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-solids Fluidized-Bed Coal Combustor (77-WA/CD-1) **P 1; (D) P 7; (AC) P 8**

Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**

Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**

Comini, G. Dropwise Evaporation **HT 441**

### Commissioning Procedure

Gas Turbine Commissioning Procedure (78-GT-54) **P 125**

Comninou, M. On the Barber Boundary Conditions for Thermoelastic Contact (79-WA/APM-33) **AM 849; A**

Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 87**

### Compact Gas Turbine Combustor

Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**

Comparin, R. A. Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 309**

### Compatibility Equations

On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) **MD 47**

### Complex Loading

Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) **PVT 270**

### Complex Mechanical Systems

Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**

### Complex Shapes

Use of Forming Limit Criteria in Forging Complex Form Metal-Matrix Composites (78-WA/Mat-2) **MT 3**

### Component Life

Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**

### Component Metals

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) **L 201; (D) L 206; (AC) L 207**

### Component Systems

On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 206**

### Composite Materials

Isotropic Properties of Platelet-Reinforced Media **MT 299**

Layered Cylindrical Pressure Vessels (78-PVP-103) **PVT 80**

Reliability as a Materials Property (78-WA/Mat-1) **MT 27**

### Composite Solids

Heat Transfer in Composite Solids with Heat Generation **HT 137**

### Composite Structural Components

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-86) **P 195**

### Composite Structures

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

### Composites

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**

### Compressibility

Compressibility Effects in Cavity Flows **F 53**

### Compressible Flow

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31; (D) AM 963; (AC) AM 964**

### Compressible Gas Flow

Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 76**

### Compressible Hyperelastic Tube

Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**

### Compressible Thermofluid Systems

State Variables and Pseudo Bond Graphs for Compressible Thermofluid Systems **DS 201**

### Compression

Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression **AM 883**

Mechanical Behavior of Metals in Dynamic Compression **MT 238**

Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 46; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53****

Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

### Compression Molding

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

### Compression Ratios

Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**

### Compression Springs

Squareness-Under-Load Testing and Buckling of Springs (TB) **MD 315**

### Compression Tests

Consolidation in Transversely Isotropic Solids **AM 65**

### Compressive Load

Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

### Compressive Strength

Diametral Compressive Testing Method **MT 139**

### Compressor Performance

A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384; (D) P 392-394; (AC) P 395**



### Compressor Stage

Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**

### Compressors

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

Experimental Investigation of Unsteady Phenomena in Vaned Radial Diffusers (78-GT-23) **P 52; (D) P 59; (AC) P 60**

Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D) P 39; (AC) P 40**

Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**

Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**

Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305; (D) P 313; (AC) P 314**

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397; (D) P 404**

### Compu-Based Procedure

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**

### Computational Algorithm

A State Space Method for Optimal Design of Vibration Isolators **MD 309**

### Computational Analyses

Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**

### Computational Approach

Topological Reaction Force Analysis (78-DET-58) **MD 192**

### Computational Fluid Dynamics

Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**

A New Formulation for Computational Fluid Dynamics **F 453**

### Computational Measurements

The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**

### Computational Methods

Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380; (D) (AC) MD 385**

### Computational Model

Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) **PVT 149**

### Computationally Economical Structural Analysis

Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

### Computed Dynamic Compaction

Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**

### Computer Aided Design

Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440; (D) P 448; (AC) P 449**

### Computer-Aided Design Program

Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**

### Computer-Aided Engineering Design

Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380; (D) (AC) MD 385**

### Computer-Aided Techniques

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **I 319**

### Computer Analyses

Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180; (D) (AC) L 188**

### Computer Codes

The Boundary Element Method (BR) **AM 718**

### Computer Construction

Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 181**

### Computer Control

Design of Computer Control for Manufacturing Systems (78-WA/PROD-14) **I 326**

Experience With Experimental Applications of Multivariable Computer Control **DS 108**

### Computer Generated Charts

Design Charts for Disk Cam with Reciprocating Radial Roller Followers (78-DET-36) **MD 465**

### Computer Graphic Systems

Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**

### Computer Graphics

Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

### Computer Model

Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108**

### Computer Programs

A Computer Program for Calculation of the Residual Stress Distribution and the Effective Stress Strain Curve of Cold-Formed Structural Members (GR) **MD 174**

Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**

Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**

An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**

Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 386**

A New Appraisal of Reynolds Number on Centrifugal Compressor Performance (78-GT-149) **P 384; (D) P 392-394; (AC) P 395**

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 86**

Optimal Programming of Working Cycles for Industrial Robots **MD 250**

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**

### Computer Results

Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**

### Computer Routines

Compendium of RAM Computer Routines (GR) **MD 175**

### Computer Simulation

A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**

A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**

Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/PROD-31) **I 355**

Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **I 223**

Power Extraction From Ocean Surfaces Waves **ERT 141**

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) **MD 693**

### Computer Software

A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**

### Computer System

Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**

### Computer Techniques

A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**

Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**

### Computer Technology

Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**

### Computerized Algorithms

Frontiers of Optimal Design **MD 674**

### Computers

Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**

Comte, A. An Axial Compressor-End-Wall Boundary Layer Calculation Method (D) **P 245; (AC) P 248**

### Concentrated Line Contacts

Reflections on Some Aspects of Lubrication of Concentrated Line Contacts (TB) **L 528**

### Concentric Circular Arcs

Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**

### Concrete

Distributed Damage Theory of Beams in Pure Bending (79-WA/APM-1) **AM 582**

### Concrete Constitutive Relations

Implosion Analysis of Concrete Cylindrical Vessels (TB) **PVT 98**

### Concrete Hull

Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**

### Condensate Reheating

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**

### Condensation

Condensation on an Extended Surface **HT 434**

Further Developments of Dropwise Condensation Theory **HT 603**

### Condenser Temperatures

Utilizing Geothermal Resources Below 150 C (300 F) **ERT 124**

### Condensers

Velocity Distributions and Turbulence Intensities at Tubesheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**

### Condensing Surfaces

A Generalized Procedure for the Design and Optimization of Fluted Gregori Condensing Surfaces **HT 335**

### Conducting Thick Porous Plate

Hydrodynamic Flow Over a Conducting Thick Porous Plate With Hall Effects (BN) **AM 220**

### Conduction Factor

Thin Disk On A Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 346**

### Conduction Heat Losses

The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**

### Cone Sprays

Predictions of Induced Air Flows in Hollow Cone Sprays **F 312**

### Cones

Frictional Resistance of Enclosed Rotating Cones With Superposed Throughflow **F 259**

### Configuration Commonality Considerations

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

### Conform Metal Forming Process

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**

### Conical Diffuser

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

### Conical Frustrums

Calculation of Shape Factors between Rings and Inverted Cones Sharing a Common Axis (D) (AC) **HT 188**

### Conical Walls

Swirling Flow Through Annular Diffusers With Conical Walls **F 224**

### Connecting-Rod Bearing

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190; (D) L 198; (AC) L 200**

### Connectivity Sum Reduction

Limit Position of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504; (D) (AC) MD 507**

### Consolidation Process

Consolidation in Transversely Isotropic Solids **AM 65**

### Constant-Velocity Transmission

Displacement Analysis of Spatial 7R Mechanisms Suitable for Constant-Velocity Transmission Between Parallel Shafts (78-DET-9) **MD 604**

### Constitutive Equations

A Constitutive Equation for the Canine Anterior Cruciate Ligament **BE 15**

Constitutive Equation of Lung Tissue Elasticity **BE 38**

### Constrained Balancing Techniques

Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304**

### Constraint Forces

Indirect Control of the Forces of Constraint in Dynamic

**Systems DS 355**  
**Contact Angles**  
 Effect of Solid Properties and Contact Angle in Dropwise Condensation and Evaporation HT 48  
**Contact Area**  
 Strongly Anisotropic Rough Surfaces (78-Lub-16) L 15  
**Contact Conductances**  
 Effects of Multiple Sources in the Contact Conductance Theory HT 132  
**Contact Ellipse**  
 Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) L 92  
**Contact Forces**  
 Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) L 180; (D) (AC) L 188  
**Contact Lines**  
 A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio MD 274  
**Contact Problems**  
 Contact Problems in Wire Ropes (79-DE-2) MD 702  
**Contact Stresses**  
 The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) L 105  
**Contact Surfaces**  
 A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) L 164; (D) (AC) L 170  
**Contact Zones**  
 A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) AM 97  
**Containment Vessel**  
 Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) PVT 342  
**Contaminated Lubricant**  
 Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) L 171; (D) L 177; (AC) L 178  
**Continuum Mechanics**  
 Continuum Mechanical and Statistical Approaches in the Mechanics of Granular Materials (BR) AM 987  
**Contour Changes**  
 Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) I 153  
**Contour Plots**  
 Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) L 2231; (D) L 238; (AC) L 239  
**Contour Plotting Scheme**  
 A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) MD 349  
**Contractile Filament Stress**  
 Contractile Filament Stress in the Left Ventricle and its Relationship to Wall Stress BE 225  
**Contractions**  
 Fluid Mechanics of Longitudinal Contractions in the Small Intestine BE 284  
**Control Capability**  
 Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) I 191  
**Control Engineering**  
 The Impact LSI Technology on Control Engineering (F) DS 5  
**Control Modes**  
 Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) P 168  
**Control Synthesis**  
 Simulation and Control Synthesis of Manipulator in Assembling Technical Parts DS 332  
**Control Systems**  
 An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) DS 71  
 Dynamic Response Testing of Gas Turbines (78-GT-31) P 95  
 Gas Turbine Commissioning Procedure (78-GT-54) P 125  
 Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) P 259  
 Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) P 79  
 A Rotating Stall Control System for Turbojet Engines (78-GT-115) P 305; (D) P 313; (AC) P 314  
 USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) P 397; (D) P 404

**Control Technology**  
 Controlling and Measuring for Energy Conservation (F) DS 5  
 Introduction to Fluid Logic (BR) DS 83  
**Controlled Vibration**  
 Vibration of Beams Carrying Discrete Dampers and Masses MD 317  
**Controller Support**  
 A Feedback Vibration Controller for Circular Saws DS 44  
**Controllers**  
 Design of Multivariable Controllers for an Advanced Turbofan Engine by Zakian's Method of Inequalities DS 296  
 Robust Multivariable Controllers for a Tubular Ammonia Reactor DS 296  
**Convection**  
 Convective Heat Transfer of Laminar Droplet Flow in Thermal Entrance Region of Circular Tubes HT 480  
 Convective Heat Transfer in Porous Media (78-HT-45) HT 507  
 Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures HT 238  
 Effects of Mass Transfer and Free-Convection Currents on the Flow Past an Impulsively Started Vertical Plate AM 757  
 Fin Thickness for an Optimized Natural Convection Array of Rectangular Fins (TN) HT 564  
 Forced Convection Heat Transfer on Heated Bottom Surface of a Cavity HT 475  
 Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries HT 598  
 Freezing Controlled by Natural Convection HT 578  
 Heat Transfer by Forced and Free Convection in a Horizontal Channel with Differentially Heated Ends HT 417  
 Laminar Free Convection in Small Aspect Ratio Rectangular Enclosures with Isothermal Boundary Conditions (TN) HT 569  
 Les instabilités hydrodynamiques en convection libre, forcé et mixte (BR) AM 966  
 Local Nonsimilarity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate HT 542  
 The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) HT 648  
 Mechanism of Heat and Momentum Transfer of Combined Free and Forced Convection with Opposing Flow (TN) HT 573  
 Method for Visualizing High Prandtl Number Heat Convection (TN) HT 571  
 Mixed Convection on Inclined Surfaces (78-WA/HT-46) HT 422  
 Natural Convection of Mercury in a Magnetic Field parallel to the Gravity HT 227  
 Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid (TN) HT 566  
 A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries HT 233  
 Onset of Convection in Fluid Layers with Non-uniform Volumetric Energy Sources (79-HT-100) HT 666  
 Over-All Heat Transfer from Vertical Cones in Laminar Free Convection: an Approximate Method (TN) HT 174  
 Perturbation Solutions to Phase Change Problem Subject to Convection and Radiation (77-WA/HT-16) HT 96  
 Small Reynolds Number Convection in Rotating Spherical Annuli HT 427  
 Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) HT 249  
 A Study of Penetrative Convection in Rotating Fluid HT 261  
 The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-86) ERT 240  
 Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet HT 265  
 A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection HT 592  
 Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter HT 256  
**Convection Flows**  
 Fluid Temperature and Mixed Convection Effects in Hot-Wire Measurements of Natural Convection Flows (BN) AM 231  
 Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) HT 381  
**Convective Heat Transfer**  
 Convective Heat Transfer Augmentation in Thermal

Entrance Regions by means of Thermal Instability HT 222  
 A Study of Entropy Generation in Fundamental Convective Heat Transfer HT 718  
**Convective Melting**  
 Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water HT 313  
**Convective Transfer**  
 Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) HT 376  
**Convectively Cooled Plate**  
 Thin Disk On A Convectively Cooled Plate—Application to Heat Flux Measurement Errors HT 346  
**Converter System**  
 Optimization of Power Absorption From Sea Waves ERT 145  
**Cook, W. (author)** AMSEC Users Guide (GR) MD 174  
**Cooled Disk Heaters**  
 Correlation of Burnout Data for Disk Heaters Cooled by Liquid Jets (TN) HT 363  
**Cooled Sections**  
 Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) HT 672  
**Cooley, L. A.** 50-Fold Difference in Region—II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect MT 86  
**Cooling**  
 Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) P 109  
 Jet Cooling at the Rim of a Rotating Disk (78-GT-25) P 68  
**Cooling Rate**  
 The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method HT 326  
**Cooling Systems**  
 Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) DS 162  
**Cooling Towers**  
 Potential Weather Modification Caused by Waste Heat Release from Large Dry Cooling Towers HT 164  
**Cooper, R. E.** Strongly Implicit Algorithms for Use in Three-Dimensional Natural Convection Studies (TN) HT 739  
**Cooperider, H. K.** Lateral Stability of Freight Cars With Axles Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) I 1  
**Coordinate Processing**  
 Three-Dimensional Coordinate Data Processing in Human Motion Analysis BE 279  
**Coordinate Transformation**  
 Solution of Anisotropic Problems of First Class by Coordinate Transformation HT 340  
**Copeland, J. F.** Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-B-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) MT 214  
**Copper**  
 Application of Damage Concepts to Predict Creep-Fatigue Failures (78-PVP-26) MT 284  
**Copper Powder Medium**  
 Computed Dynamic Compaction of a Two-Layered Copper Powder Medium MT 122  
**Copper-Tin Based Alloys**  
 Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) L 201; (D) L 206; (AC) L 207  
**Core Cooling**  
 Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) PVT 298  
**Coriolis Force**  
 Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) P 23; (D) P 29; (AC) P 30  
**Cormier, K. R. (author)** 3000-HP Roller Gear Transmission Development Program. Volume VI. Reliability and Maintainability Report (GR) MD 174  
**Corona Discharge**  
 Low-Velocity Heat Transfer to a Flat Plate in the Presence of a Corona Discharge in Air (76-WA/HT-47) HT 157  
**Corotating Disks**  
 Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (76-WA/FE-41) F 87  
**Correction Methods**  
 A Comparison of Correction Methods Used in the Evaluation

of Drag Coefficient Measurements for Two-Dimensional Rectangular Cylinders (79-WA/FE-3) **F 506**

**Correlation Function**  
A General Theory for Laminar Lubrication With Reynolds Roughness **L 8**

**Correlation Methods**  
A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data **MT 317**

**Coriveau, P. J.** Performance Prediction for an Axial Flow Hydraulic Transmission (78-WA/OCE-5) **I 434**

**Corrosion**  
Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analyses of Nuclear Reactor Vessels (79-PVP-16) **MT 182**

Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) **P 598**

Corrosion Under Random Exposure Conditions (TB) **MT 306**

Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-phases Fluidized-Bed Coal Combustor (77-WA/CD-1) **P 1, (D) P 7, (AC) P 8**

Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**

**Corrosion Damage**  
The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**

**Corrugated Plates**  
A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAS-26) **I 441**

**Cortical Bone**  
The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**

**Cost Effectiveness**  
Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

**Costanza, P. A.** Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-TEX-6) **I 165**

**Costin, L. S.** Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 188**; The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel **MT 258**

**Collington, R. V.** Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**

**Cotton Dust**  
Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-TEX-6) **I 165**

**Cotton Fibers**  
Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-TEX-2) **I 197**

**Coughlin, J. M.** Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) **I 378**

**Coulomb Bearing Friction**  
A Two-Degree-of-Freedom System With Coulomb Bearing Friction (BN) **AM 217**

**Counterpulsation**  
A Simulation of the Dynamics of Counterpulsation **BE 105**

**Counterweighted Rocker Link**  
The Elastic Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 89**

**Coupled Hydrodynamic-Structural Response**  
Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**

**Coupled Thermoelastic Vibrations**  
Eigensolutions for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**

**Coupler Curves**  
Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

**Coupling Forces**  
Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**

**Courchesne, J.** A Comparison of Correction Methods Used in the Evaluation of Drag Coefficient Measurements for Two-Dimensional Rectangular Cylinders (79-WA/FE-3) **F 506**

**Couston, M.** Numerical Solutions of Nonsteady Two-Dimensional Transonic Flows **F 341**

**Cover Gas Seals**  
A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) **P 647**

**Cover, P. W.** Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

**Cowin, S. C.** (editor) Continuum Mechanical and Statistical Approaches in the Mechanics of Granular Materials (BR) **AM 967**; The Pressure Ratio in the Theory of Bin Pressures (79-WA/APM-13) **AM 524**; On the Strength Anisotropy of Bone and Wood (79-WA/APM-21) **AM 832**

**Cox, J. T.** Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141, (D) BE 149, (AC) BE 150**

**Coxon, M.** Symmetric Sink Flow Between Parallel Plates (Er) **F 396**

**Crabb, D.** The Influence of Geometric Asymmetry on the Flow Downstream of Row of Jets Discharging Normally into a Free Stream (TN) **HT 183**

**Crack Arrestor**  
An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**

**Crack Growth**  
Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analyses of Nuclear Reactor Vessels (79-PVP-16) **MT 182**

Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) **MT 224**

Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) **MT 191**

Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (Er) **MT 153**

Fatigue Crack Growth of Stainless Steel Piping in a Pressurized Water Reactor Environment **PVT 73**

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**

Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 189**

**Crack Growth Behavior**  
Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

**Crack Growth Model**  
Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53; (D) (AC) MT 58**

**Crack Growth Rate**  
50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 85**

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

**Crack Pattern**  
A New Key and Keyway Design (78-WA/DE-7) **MD 338**

**Crack Propagation**  
Acoustic Emission From a Brief Crack Propagation Event **AM 107**

Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**

Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**

The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 205**

Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation **MT 275**

The Statistical Nature of Fatigue Crack Propagation **MT 148**

**Crack Spacing**  
Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) **ERT 34**

**Crack Tip**  
A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**

**Crack Tip Dislocation**  
Fracture Related to a Dislocation Distribution (79-WA/APM-26) **AM 817**

**Crack Tip**  
A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 80**

**Cracking**  
An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**

The Effect of Water Chemistry on the Reliability of Modern Steam Turbines (78-JPGC-Pwr-9) **P 477**

**Cracks**  
A Circular Crack Under Asymmetric Loads and Some Related Integral Equations (79-WA/APM-12) **AM 821**

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**

On the Determination of Stresses, Displacements, and Stress-Intensity Factors in Edge-Cracked Sheets With Mixed Boundary Conditions **AM 611**

Diffraction of SH-Waves by an Edge Crack **AM 101**

Diffraction of Torsional Waves by a Flat Annular Crack in an Infinite Elastic Medium **AM 827**

Distributed Damage Theory of Beams in Pure Bending (79-WA/APM-1) **AM 592**

Dynamic Crack-Tip Fields According to Deformation Theory (BN) **AM 707**

The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/APM-16) **AM 618**

Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**

Note on Apex Singularities of a Wedge-Shaped Crack Under All Modes (BN) **AM 705**

Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) **PVT 270**

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

Plane-Strain Buckling of a Crack in a Harmonic Solid Subjected to Crack-Parallel Compression (79-WA/APM-4) **AM 597**

The Problem of an Inclined Crack in an Orthotropic Strip **AM 80**

A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) **PVT 181**

The Propagation of a Crack by a Rigid Wedge in an Infinite Power Law Viscoelastic Body (79-WA/APM-10) **AM 805**

The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) **AM 577**

Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) **PVT 267**

**Craft, W. J.** The Investigation of Locomotive Dynamics via A Large Degree of Freedom Modeling **I 397**

**Crandall, S. H.** (reviewer) The Physics of Vibration: Part I—The Simple Classical Vibrator (BR) **AM 966**

**Crane, R. I.** Measurements Within Görtler Vortices **F 517**

**Crank Circles**  
On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**

**Crank Coordination**  
Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**

**Crank-and-Rocker Linkages**  
Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**

Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 28**; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 28**

**Crash Resistant Transport Package**  
Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**

**Cravinho, E. G.** The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**; Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures **BE 213**

**Creswell, W. J.** A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164; (D) (AC) L 170**

**Creep**  
Creep of Metals and Plastics Under Combined Stresses, A Review **MT 365**

Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) (AC) **MT 178**

An Investigation of Multi-Axial Creep Characteristics of Metals **L 356**

Reference Stress and Temperature for Nonisothermal Creep of Structures **AM 795**



Statistical Methods for Creep, Fatigue and Fracture Data Analysis **MT 344**

#### Creep-Adhesion Function

Similarity Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) **I 278**

#### Creep Behavior

A Physically Consistent Method for the Prediction of Creep Behavior of Metals (79-WA/APM-24) **AM 800**

#### Creep Buckling

Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression **AM 883**

#### Creep Crack Propagation

Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**

#### Creep Damage

Creep Damage and the Remaining Life Concept **MT 311**

#### Creep Data

Developments in Parametric Methods for Handling Creep and Creep-Rupture Data **MT 326**

Some Observations Regarding the Statistical Determination of Stress Rupture Regression Lines **PVT 286**

#### Creep Deformation

Rate Equations for Elevated Temperature Creep **MT 396**

#### Creep Failure Criteria

Creep Failure Criteria for High Temperature Alloys **MT 374**

#### Creep Fatigue

Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation **MT 275**

#### Creep & Fatigue

Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation **PVT 276**

#### Creep-Fatigue Failure

Application of Damage Concepts to Predict Creep-Fatigue Failures (78-PVP-26) **MT 294**

#### Creep-Fatigue Interaction

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

#### Creep Loading

An Engineering Approach for Cumulative Damage in Metals Under Creep Loading **MT 331**

#### Creep Modelling

Viscoplasticity Based on Total Strain. The Modelling of Creep With Special Considerations of Initial Strain and Aging **MT 380**

#### Creep Range

Effects on Nonlinear Stress-Strain Rate Relation on Deformation and Fracture of Materials in Creep Range **MT 389**

#### Creep Rupture

A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data **MT 317**

Remaining Creep or Stress-Rupture Life Under Nonsteady Temperature and Stress **MT 331**

#### Critical-Geometry-Kineto-Elasto-Statics (CGKES)

Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**

#### Critical Heat Flux

The Thermal-Hydraulic Phenomena Resulting in E<sub>af</sub> Critical Heat Flux and Rewet in the Semiscale Core **HT 43**

Ultra-sonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**

#### Critical Heat Flux (CHF)

Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**

Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**

#### Critical Operating Speeds

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 216**

#### Critical Points

Viscosity of Nitrogen near the Critical Point (78-WA/HT-38) **HT 3**

#### Critical Regimes

Critical Regimes of Coal Ignition (78-JPGC/Fu-1) **P 576**

Crooker, T. W. 50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 86**

Crooble, A. L. Apparent Radiative Properties of an Isotropically Scattering Medium on a Diffuse Substrate **HT 68**

#### Cross Flow

Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 103**

#### Cross-Plane Contours

Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**

#### Cross-Ventilation

Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) **F 128**

#### Crossflow

Trajectories of Single and Double Jets Injected into a Crossflow of Arbitrary Velocity Distribution **F 217**

Crown, R. (author) Mathematical Models for the Study of the Reliability of Systems (BR) **Ap 172**

#### Crude Oil Storage

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**; Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**

#### Crude Oils

Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

Measurement of Energy Resources **DS 16**

Cruce, T. A. (reviewer) The Boundary Element Method (BR) **AM 718**; A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) **P 563**

#### Crystalline Solids

Combining Phenomenology and Physics in Describing the High Temperature Mechanical Behavior of Crystalline Solids **MT 387**

Cummings, G. E. Dynamic Response of a Cylindrical Shell in a Potential Fluid (79-WA/APM-22) **AM 772**

Cumpsty, N. A. Experimental Investigation of Unsteady Phenomena in Vaned Radial Diffusers (D) **P 59**; (AC) **P 60**; Experimental Study on Flow in a Supersonic Centrifugal Impeller (D) **P 39**; (AC) **P 40**

#### Cumulative Damage

An Engineering Approach for Cumulative Damage in Metals Under Creep Loading **MT 337**

Cunningham, R. G. The Computation of Optimum Pressure Recovery in Two-Dimensional Diffusers (D) (AC) **F 403**

Cunsolo, D. Two-Dimensional Laminar Flow in Elbows **F 276**

Cur, N. Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface **HT 211**

#### Cure Time Restrictions

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

Curran, R. M. The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**

Curtis, H. C. Jr. Two-Dimensional Dynamics of Tracked Ram Air Cushion Vehicles With Fixed and Variable Winglets (79-WA/DSC-11) **DS 321**

#### Curvature Correction

Acoustic Emission From a Brief Crack Propagation Event **AM 187**

#### Curvature Effect

A Study of Penetrative Convection in Rotating Fluid **HT 281**

#### Curvature Radius

Design Charts for Disk Cams with Reciprocating Radial Roller Followers (78-DET-36) **MD 485**

#### Curvature Theory

Higher Order, Planar Tangent-Line Envelope Curvature Theory (78-DET-21) **MD 563**

#### Curvatures

Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/PROD-42) **I 341**

#### Curve-Fitting Procedure

Development of Fatigue Design Curves for Pressure Vessel Alloys Using a Modified Langer Equation **PVT 292**

#### Curve Generation Technique

A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) **MD 349**

#### Curve Shapes

Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**

#### Curved Elastic Tube

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**

#### Curses

Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

Cusano, C. An Analytical Study of Starved Porous Bearings **L 38**

#### Cutters

A Study of Factors Influencing the Drillability of Shales: Single-Cutter Experiments with STRATAPAX® Drill Blanks **ERT 189**

#### Cutting Conditions

Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) **I 135**; Part II: The Force Equilibrium **I 141**

#### Cutting Cycle

An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**

#### Cutting Edge

A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**

#### Cutting Edge Failure

Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/PROD-17) **I 391**

#### Cutting Forces

Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/PROD-16) **I 264**

#### Cutting Points

Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 165**

#### Cutting Tools

Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108**

On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**

Optimal Design on Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

Reliability Analysis of Cutting Tools (78-WA/PROD-9) **I 185**

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**

A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio **MD 274**

#### Cycle Analysis

Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**

#### Cycle Fatigue

Application of J-Integral to High-Temperature Crack Propagation—Part II—Fatigue Crack Propagation **MT 162**

#### Cycle Performance

Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**

#### Cycle Systems

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**

#### Cyclic Frequency Range

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

#### Cyclic Loading

Effect of Cyclic Loading on the Yield Surface **PVT 59**

Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) (D) (AC) **MT 58**; (78-Mat-9) **MT 53**; (D) (AC) **MT 58**

50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: a Grain-Size Effect **MT 86**

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

Uniaxial Cyclic Loading of Elastic-Viscoplastic Materials (79-WA/APM-30) **AM 805**

#### Cyclic Loads

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (78-DET-66) **MD 373**

#### Cyclic Plasticity

Verification of Specimens for Low-Cycle Fatigue and Cyclic



Plasticity Testing **PVT 321**

**Cylinder Pressure**  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **D5 64**; (D) **D5 69**; (AC) **D5 70**

**Cylinders**  
Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 106**  
Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**  
Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **I 178**  
An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) **F 292**; (AC) **F 293**  
Flow in a Whirling Rotor Bearing **AM 767**  
Free Convection Heat Transfer from Heated Cylinders Immersed in a Shallow Water Layer (TN) **HT 741**  
Frictional Resistance of Enclosed Rotating Cones With Superposed Throughflow **F 259**  
Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**  
Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) **JERT 167**  
Laminar Compressible Flow Over a Stationary Disk in a Rotating Cylinder **F 173**  
Latent Heat-of-Fusion Energy Storage: Experiments on Heat Transfer from Cylinders During Melting (78-HT-47) **HT 453**  
Melting about a Horizontal Row of Heating Cylinders (TN) **HT 732**  
Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid (TN) **HT 566**  
Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) **F 251**  
Penetration of a Half Space by a Rectangular Cylinder (79-WA/APM-3) **AM 587**  
On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**  
Three-Dimensional, Steady-State Heat Conduction in Cylinders of General Anisotropic-Media **HT 548**  
Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**  
Twisted-Pore Effect on Fluid Flow, Solid Deformation and Stress in a Poro-Elastic Cylinder **AM 784**  
Vortex Motions Induced by V-Grooved Rotating Cylinders and Their Effect on Mixing Performance (79-FE-2) **F 186**

**Cylindrical Hot-Film Velocity Sensors**  
The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**

**Cylindrical Pressure Vessels**  
Layered Cylindrical Pressure Vessels (78-PVP-103) **PVT 86**

**Cylindrical Roller Bearing Design**  
A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 184**; (D) (AC) **L 170**

**Cylindrical Roller Bearings**  
An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (78-Lub-27) **L 327**; (D) (C) **L 337**

**Cylindrical Shells**  
Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) **PVT 184**  
Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) **PVT 186**  
Bifurcation of Elastic-Plastic Circular Cylindrical Shells Under Internal Pressure **AM 889**  
Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**  
Dynamic Response of a Cylindrical Shell in a Potential Fluid (79-WA/APM-22) **AM 772**  
Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**  
Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**  
Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) **PVT 235**  
Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**  
Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 98**

**Cylindrical Slug Damper**  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

**Cylindrical Symmetry**  
Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**

**Cylindrical Systems**  
Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 2: Experiments (79-APM-4) **AM 52**

**Cylindrical Tubes**  
Large Strain Solution for Pressurized Elasto/Plastic Tubes (BN) **AM 228**

**Cylindrical Vessels**  
Implosion Analysis of Concrete Cylindrical Vessels (TB) **PVT 98**

**Cyrus, J. D.** Propulsion System Considerations for the Subsonic V-STOL (78-GT-57) **P 228**

**Cyrus, V.** An Axial Compressor-End-Wall Boundary Layer Calculation Method (D) **P 245**; (AC) **P 248**

## D

**Dacron Polyester**  
Materials for Human Implantation **BE 2**

**Dahlot, W.** Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**

**D'Alembert's Principle**  
Dynamic Analysis of Spatial Mechanisms Using Dual Successive Screw Method and D'Alembert's Principle (78-DET-22) **MD 569**

**Dalmaz, G.** Effect of Geometry on Hydrodynamic Film Thickness (D) **L 238**; (AC) **L 239**

**Dalton, C.** Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

**Damage Accumulation**  
A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

**Damage Assessment**  
The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**

**Damage Concepts**  
Application of Damage Concepts to Predict Creep-Fatigue Failures (78-PVP-26) **MT 284**

**Damerell, P. S.** Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**

**Damped Elastic Behavior**  
The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part II: Application and Experiment (78-DET-24) **MD 89**

**Damped Oscillations**  
On the Damped Oscillations of a Weakly Nonlinear Pendulum (BN) **AM 213**

**Dampers**  
A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

**Damping**  
Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**  
A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**  
Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 106**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**  
A Feedback Vibration Controller for Circular Saws **D5 44**  
Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids **AM 519**  
A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**  
A Study of Penetrative Convection in Rotating Fluid **HT 261**

**Damping Coefficient**  
Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**

**Damping Forces**  
The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 183**

**Daney, D. E.** An Experimental Study of Thermally-Induced Flow Oscillations in Supercritical Helium **HT 9**

**Daniel, K. J.** Prediction of Radiation Absorption and Scattering in Turbid Water Bodies (77-HT-47) **HT 63**

**Daniels, W. H.** Design, Fabrication and Field Test Performance of Slug-Type Diamond Compacts Oil Bits **ERT 41**; A Study of Factors Influencing the Drillability of Shales: Single-Cutter Experiments With STRATAPAX® Drill Blanks **ERT 168**

**Danyluk, S.** Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**

**Darling, D. W.** Marine Riser Vibration Response Determined by Modal Analysis **ERT 158**

**Dash, S. M.** A Hybrid Marching Integration Procedure for the Prediction of Two-Dimensional Supersonic Boundary Layers (D) (AC) **F 400**

**Data Acquisition**  
Analysis of Roller/Ball Vibrations (D) (AC) **MD 519**

**Data Analysis**  
Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

**Data Collection Systems**  
The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

**Data Measurements**  
Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**

**Datner, B.** Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**

**Datsarlis, P.** Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380**; (D) (AC) **MD 385**

**Delta, S. K.** Diffraction of SH-Waves by an Edge Crack **AM 101**

**Devia, H.** A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (D) **P 392**; (AC) **P 395**

**Davis, H. T.** Heat Transfer in Composite Solids with Heat Generation **HT 137**

**Davis, W. H., Jr.** A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 165**

**Day, J. P.** A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 270**

**Day, L.** The Validity of Some Approximate Solutions to Reynolds Equation (TB) **L 385**

**Dean, T. A.** Die Temperatures During Production Drop Forging (78-WA/Prod-28) **I 385**

**Decker, R. L.** A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) **MD 658**

**Decomposition Methods**  
Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380**; (D) (AC) **MD 385**

**Decompression**  
Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) **ERT 68**

**DeCoster, M. A.** Jet Pump Cavitation With Ambient and High Temperature Water **F 93**

**DeCrescente, M. A.** Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**

**Deep-Hole Machining**  
Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

**Deep Space Network**  
Aspects of Job Scheduling (78-PEM-A) **I 117**

**Defect Clusters**  
The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**

**Defect Depth**  
Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

**Defect Forces**  
An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233**; (D) **P 245**; (AC) **P 248**

**Defect Tolerance**  
Can Fracture Mechanics Determine Defect Tolerance? **PVT 97**

### Defective Solution

Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**

### Deflection

Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304**

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**

### Deflection Response

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**

### Deformable Solids

Elastohydrodynamic Squeeze Films: Effects of Viscosity and Fluctuating Load (78-Lub-20) **L 74**

### Deformation

Acoustic Emission from a Brief Crack Propagation Event **AM 107**

Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/PM-25) **AM 895**

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**

Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) **PVT 149**

Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/PROD-31) **I 355**

Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/PROD-42) **I 341**

A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 55**

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**

Dynamic Crack-Tip Fields According to Deformation Theory (BN) **AM 707**

Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**

Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**

Effects of Nonlinear Stress-Strain Rate Relation on Deformation and Fracture of Materials in Creep Range **MT 368**

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 198; (D) L 200**

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**

Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kinetic-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**

Exact Equations for the Inextensional Deformation of Cantilevered Plates (79-WA/PM-11) **AM 631**

Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**

A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 90**

On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**

The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/PM-25) **AM 31**

Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**

A Simplified Method to Account for Plastic Rate Sensitivity With Large Deformations (79-WA/PM-27) **AM 611**

The Strain-Rate and Temperature Dependence of 18Ni(350) Maraging Steel Tensile Properties **MT 91**

Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**

Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**

### Deformation Mechanisms

Ductile Fracture in Axisymmetric Extrusion and Drawing—Part 1: Deformation Mechanics of Extrusion

and Drawing (78-Prod-A) **I 23; Part 2: Workability in Extrusion and Drawing (78-Prod-B) I 38**

### Deformation Patterns

The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**

### Deformation Properties

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**

### Deformed Roll Shape

A Study of Cold Strip Rolling **MT 129**

### Degenerate Curves

Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**

DeHoff, P. H. A Constitutive Equation for the Canine Anterior Cruciate Ligament **BE 15**

DeHoff, R. L. Optimal Control of Turbine Engines **DS 117**

Delale, F. The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/PM-16) **AM 618; The Problem of an Inclined Crack in an Orthotropic Strip AM 90**

### Delamination

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**

Del Giudice, S. Dropwise Evaporation **HT 441**

Delph, T. J. Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**

de Neve, P. F. W. A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**

Denli, H. Fluid Mechanics of Longitudinal Contractions in the Small Intestine **BE 284**

### Density Change

Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**

### Density Distribution

Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**

### Density Interfaces

Entrainment by a Jet at a Density Interface in a Thermally Stratified Vessel (77-HT-23) **HT 538**

### Deposits

Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

Derby, S. Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**

### Derivation Prism

Measurement of Separator Contact Forces in Ball Bearings Using a Derivation Prism (78-Lub-35) **L 190; (D) (AC) L 188**

De Ruyck, J. An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D) P 245; (AC) P 248**

De Sa, S. Symmetrical Algebraic Motions in the Plane (78-DET-40) **MD 15**

DesForges, D. T. The Application of Model-Referenced Adaptive Control to Robotic Manipulators **DS 193**

DeShpande, R. B. Fluid Dynamic Excitation of Centrifugal Compressor Rotor Vibrations (D) **F 401; (AC) F 402; Fully Implicit Algorithms for Solving Partial Differential Equations (D) (AC) F 289**

### Design Analysis

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) **L 105**

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**

Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 165**

Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 96**

### Design Approach

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

### Design Assessment

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

### Design Changes

Materials Problems Experienced at the Synthane Coal-Gasification Pilot Plant **MT 185**

### Design Charts

Design Charts for Disk Cams with Reciprocating Radial

Roller Followers (78-DET-36) **MD 485**

### Design Comparison

A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 63**

### Design Concepts

Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers With Positive Feedback (78-WA/DSC-3) (TB) **DS 77**

Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**

Multistage Geared Geneva Mechanism (78-DET-18) **MD 41**

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part II: Applications (77-WA/NE-7) **P 16**

### Design Consideration

The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

### Design Constraints

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

Propulsion System Considerations for the Subsonic V/STOL (78-GT-57) **P 228**

### Design Correlation

Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**

### Design Criteria

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**

Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

### Design Data and Methods

Optimum Hole Shapes in Finite Plates Under Uniaxial Load **AM 691**

### Design Development

Appliance Safety by Design (GR) **MD 368**

Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 386**

Preliminary Design, Vertical Stores Handling Conveyor (GR) **MD 386**

### Design Engineering

On the Design of Thin Subsonic Airfoils **AM 6**

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

### Design Equation

On Certain Least-Square Synthesis Methods Misconceptions (78-DET-11) **MD 47**

### Design Examples

General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**

### Design Guidelines

Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**

### Design Improvements

Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**

### Design Methodology

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

### Design Methods

Compensation of the Speed Governor of a Water Turbine by the Method of Inequalities **DS 205**

### Design Optimization

A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) **MD 349**

Design of an Extreme Crash Resistant Transport Package

- (78-DE-W-4) **MD 342**  
Global Non-Iterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) **MD 845**  
A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**
- Design Parameters**  
Optimization of Power Absorption From Sea Waves **ERT 145**  
Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **I 223**
- Design Point Correlation**  
A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**
- Design Position**  
Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**
- Design Practice**  
Response of Building Components to Heating in a Fire **HT 365**
- Design Problems**  
Reliability as a Materials Property (78-WA/Mat-1) **MT 27**
- Design Procedures**  
Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440; (D) P 448; (AC) P 448**  
Fatigue Analysis of Offshore Structures **ERT 218**  
A Generalized Procedure for the Design and Optimization of Fluted Gregoir Condensing Surfaces **HT 335**  
Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-86) **ERT 128**  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**  
Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**
- Design Process**  
Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 246**
- Design Program**  
Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**
- Design Standards**  
A New Key and Keyway Design (78-WA/DE-7) **MD 338**
- Design Strategy**  
Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9**
- Design Study**  
Preliminary Design Study of an Integrated Tail Rotor Servo Power Module (GR) **MD 306**
- Design Systems**  
Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 165**  
Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**
- Design Techniques**  
Design, Fabrication and Field Test Performance of Slug-Type Diamond Compacts Oil Bits **ERT 41**  
Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**  
Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**
- Design Technology**  
Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**
- Design Values**  
Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**
- Design Variables**  
Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 284**
- Designer Aids**  
Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**
- Deslouis, C.** Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall **F 121**
- Destabilizing Effects**  
Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23; (D) P 29; (AC) P 30**
- Deutsch, S.** The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**
- Development History**  
Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**
- DeVillier, M., Jr.** Propulsion System Considerations for the Subsonic V-STOL (78-GT-57) **P 228**
- Dewey, C. F., Jr.** Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**
- DeWitt, D. P.** Measurements of Temperature Distributions at Electro-Surgical Dispersive Electrode Sites **BE 66**
- Dhir, S. K.** A Hybrid Problem in Plane Elasticity (BN) **AM 714**
- Dhir, V. K.** Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**
- Diagnostic Method**  
Analysis of Roller/Ball Bearings Vibrations (77-WA/DE-5) **MD 118**
- Diametral Compressive Testing**  
Diametral Compressive Testing Method **MT 139**
- Diamond Compacts**  
Design, Fabrication and Field Test Performance of Slug-Type Diamond Compacts Oil Bits **ERT 41**
- Die Temperatures**  
Die Temperatures During Production Drop Forging (78-WA/Prod-28) **I 385**
- Dielectric Drop**  
Small Reynolds Number Electro-Hydrodynamic Flow Around Drops and the Resulting Deformation (79-WA/AFM-8) **AM 510**
- Diercks, D. R.** Development of Fatigue Design Curves for Pressure Vessel Alloys Using a Modified Langer Equation **PVT 292**
- Diesel Engines**  
Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) **P 516**
- Diesel Exhausts**  
Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) **P 598**
- Diesel Fuels**  
The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) **P 524**
- Differential Difference Equation**  
Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **DS 37**
- Differential Equations**  
Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel **AM 21**  
A State Space Method for Optimal Design of Vibration Isolators **MD 309**  
Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**
- Differential Fluids**  
Fluid-Film Flows of Differential Fluids of Complexity n Dimensional Approach—Applications to Lubrication Theory **L 140**
- Differential Games**  
Parameter Optimization for Two-Player Zero-Sum Differential Games **DS 345**
- Diffraction**  
Diffraction of Torsional Waves by a Flat Annular Crack in an Infinite Elastic Medium **AM 827**
- Diffuse Substrate**  
Apparent Radiative Properties of an Isotropically Scattering Medium on a Diffuse Substrate **HT 68**
- Diffuse-Walled Enclosures**  
Band Radiation within Diffuse-Walled Enclosures—Part I: Exact Solutions for Simple Enclosures **HT 81; Part II: An Approximate Method Applied to Simple Enclosures** **HT 85**
- Diffuser Angle**  
Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 309**
- Diffuser Performance**  
Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**
- Diffusers**  
The Computation of Optimum Pressure Recovery in Two-Dimensional Diffusers (D) (AC) **F 403**  
An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall in Plane-Wall Diffusers **F 181**  
Experimental Investigation of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) **P 52; (D) P 59; (AC) P 60**
- Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**  
Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D) P 39; (AC) P 40**  
Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers **HT 151**  
Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 309**  
Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) **P 259**  
Swirling Flow Through Annular Diffusers With Conical Walls **F 224**
- Diffusing Airfoils**  
Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**
- Diffusion Process**  
Influence on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**
- Diffusivity**  
Effect of Metal Composition on Carburizing of Steels (TB) **MT 173**
- Digital Computer Model**  
A Simulation of the Dynamics of Counterpulsation **BE 105**
- Digital Computer Program**  
Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**
- Digital Computers**  
Thin Disk On A Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 348**  
Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9**  
A Survey of Cam Manufacture Methods (78-DET-65) **MD 445**  
Topological Reaction Force Analysis (78-DET-58) **MD 192**
- Digital Control**  
A Simple Digital Control Scheme for a Class of Multi-Input, Multi-Output Industrial Processes (79-WA/DSC-10) **DS 339**
- Digital Feedback**  
On the Optimal Digital State Vector Feedback Controller With Integral and Preview Actions **DS 172**
- DiMelfi, R. J.** An Analysis of the Rupture Behavior of Pressurized Fast Reactor Cladding Tubes Subjected to Thermal Transients **MT 293**
- Dimensional Analysis**  
Fluid-Film Flows of Differential Fluids of Complexity n Dimensional Approach—Applications to Lubrication Theory **L 140**
- Dimensional Synthesis**  
Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**  
Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**
- Ding, J. L.** Creep of Metals and Plastics Under Combined Stresses, A Review **MT 365**
- Dinkoff, B.** Optimum Linear Tapering in the Design of Columns (BN) **AM 956**
- Direct Contact Cycle**  
Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**
- Disc Apparatus**  
Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) **L 201; (D) L 206; (AC) L 207**
- Discharge Configuration**  
Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) **L 154; (D) L 161; (AC) L 162**
- Discrete Dampers**  
Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**
- Discrete-Time Linear Systems**  
An Adaptive Control Policy of Discrete-Time Linear Systems With Random Parameters (TB) **DS 361**
- Discrete-Time Systems**  
Observer Design for the Minimum-Time State Reconstruction of Linear Discrete-Time Systems **DS 350**



## Disk Cams

Design Charts for Disk Cams with Reciprocating Radial Roller Followers (78-DET-36) **MD 465**

## Disk Flexibility

Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 296**

## Disk Heaters

Correlation of Burnout Data for Disk Heaters Cooled by Liquid Jets (TN) **HT 283**

## Disk Sensors

The Effect of Pressure on Skin Temperature Measurements for a Disk Sensor **BE 261**

## Disks

Dynamics of a Wobbling Symmetric Disk (BN) **AM 711**

Exact Two-Dimensional Analysis of Circular Disk Spiral Groove Bearing (Part I) **L 424**, (Part II) **L 431**

Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 58**

Laminar Boundary Layer on a Finite Disk in a Rotating Compressible Isothermal Flow **F 166**

Laminar Compressible Flow Over a Stationary Disk in a Rotating Cylinder **F 172**

Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (76-WA/FE-41) **F 87**

Thin Disk On a Convectively Cooled Plate—Application to Heat Flux Measurement Errors **HT 346**

Turbulent Flow Over a Disk Normal to a Wall (79-WA/FE-7) **F 461**

Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**

## Dislocation Distribution

Fracture Related to a Dislocation Distribution (79-WA/APM-26) **AM 617**

## Dislocation Mechanics

Flow Stress Model in Metal Cutting (78-WA/Prod-27) **I 403**, (D) (AC) **I 415**

## Dispersed Flow

On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 298**

## Dispersion

On Laminar Dispersion for Flow Through Round Tubes (79-WA/APM-14) **AM 750**

## Dispersion Spectrum

Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**

## Dispersive Electrodes

Measurements of Temperature Distributions at Electro-Surgical Dispersive Electrode Sites **BE 66**

## Displacement Analysis

Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**

Displacement Analysis of Spatial 7R Mechanisms Suitable for Constant-Velocity Transmission Between Parallel Shafts (78-DET-9) **MD 604**

## Displacement Behavior

Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**

## Displacement Constraint

Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**

## Displacement Mapping

Symmetrical Algebraic Motions in the Plane (78-DET-40) **MD 15**

## Displacement Modulated Transformers

Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**

## Displacement Pump

Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 449**

## Displacements

On the Determination of Stresses, Displacements, and Stress-Intensity Factors in Edge-Cracked Sheets With Mixed Boundary Conditions **AM 611**

## Disposal Facilities

A Unique Approach to the Offshore Gas Disposal Problem: Castellan SALS Production Facilities **ERT 210**

## Dital Profile

Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141**, (D) **BE 149**, (AC) **BE 150**

## Distillation Columns

Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**

## Distorted Inlet Flow

Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**

## Distribution Parameters

The Statistical Nature of Fatigue Crack Propagation **MT 148**

## Disturbance Amplitude

Amplitude Effects on the Dynamic Performance of Hydrostatic Gas Thrust Bearings **L 437**

Dodge, C. E. A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**

Doi, Y. Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**

Doki, H. Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

Dolezal, J. Parameter Optimization for Two-Player Zero-Sum Differential Games **DS 345**

## Dome Salt Mine

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**, Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**

## Domestic Heat Generation

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

Dorman, F. Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**

## Double-Layer SMC Panels

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

## Double-Torsion Tests

A Three-Dimensional Finite Element Analysis of the Double-Torsion Test **PVT 328**

Douglass, R. W. Small Reynolds Number Convection in Rotating Spherical Annuli **HT 427**

Dow, T. A. Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (D) (AC) **L 188**

Dowell, E. H. On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 296**

## Downhole Pressure

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**

Dowson, D. Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) **L 92**, (editor) Men of Tribology **L 115**, L 1, L 245, L 393

## Drag

Drag on an Oscillating Airfoil in a Fluctuating Free Stream **F 391**

## Drag Coefficient Measurements

A Comparison of Correction Methods Used in the Evaluation of Drag Coefficient Measurements for Two-Dimensional Rectangular Cylinders (79-WA/FE-3) **F 506**

## Drag Reduction

A Reynolds Stress Model for Flows With Drag Reduction **F 159**

Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall **F 121**

Dragel, G. M. Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**

## Drainage Channel

A Generalized Procedure for the Design and Optimization of Fluted Greging Condensing Surfaces **HT 335**

## Drawing

Ductile Fracture in Axisymmetric Extrusion and Drawing—Part 1: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23**, Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 36**

Drew, D. A. Lubrication Flow of a Particle-Fluid Mixture (BN) **AM 211**

## Drill Bits

Design, Fabrication and Field Test Performance of Slug-Type Diamond Compacts Oil Bits **ERT 41**

## Drill Blanks

A Study of Factors Influencing the Drillability of Steels: Single-Cutter Experiments with STRATAPAX® Drill Blanks **ERT 189**

## Drill Grinding Machines

A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**

## Drill Point Geometry

A Mathematical Model for Drill Point Design and Grinding (78-WA/PROD-35) **I 333**

## Drilling

A Stress Gradient Theory of Rock Fracture in Drilling **ERT 46**

## Drilling Costs

Higher Pump Pressures Can Reduce Drilling Costs **ERT 59**

## Driving Mechanism

The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**

## Driving Pins

General Forms of Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-26) **MD 438**

## Driving Power

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**

## Driving Torque

An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **I 147**

## Drop Forges

A Tabular Summary of Some Experiments in Dynamic Plasticity **MT 231**

## Drop Forging

Die Temperatures During Production Drop Forging (78-WA/Prod-28) **I 385**

## Drop-Size Distributions

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

## Drop-Size Distributions

Drop-Size Distributions of Bingham Liquid (PAINT) Sprays Produced by Fan-Jet Pressure Nozzles **I 448**

## Droplets

A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**

## Drop Trajectory

On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 288**

## Dropwise Condensation

Effect of Solid Properties and Contact Angle in Dropwise Condensation and Evaporation **HT 48**

## Dropwise Condensation

Further Developments of Dropwise Condensation Theory **HT 683**

## Drummond, P.

A Narrative History of the Petroleum Division of ASME: 1924–1978 **ERT 2**

## Dry Contact

Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) **I 278**

## Dry Saturated Steam

Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**

## Drying Operation

Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**

## Drying Processes

A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) **I 80**

## Dual-Beam Microwave Applicator

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

## Dual Screw Displacements

Dynamic Analysis of Spatial Mechanisms Using Dual Successive Screw Method and D'Alembert's Principle (78-DET-22) **MD 569**

## Dubis, D.

Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**

## Dubowsky, S.

The Application of Model-Referenced Adaptive Control to Robotic Manipulators **DS 193**

## Dubowsky, S.

Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**

## Duct Flow

A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow. Part 1 — Inviscid Flow Considerations (79-WA/FE-4) **F 415**

## Duct Walls

Forced Convection Heat Transfer on Heated Bottom Surface of a Cavity **HT 475**

## Ductile Fracture

Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) **ERT 66**

## Ductile Fracture

Ductile Fracture in Axisymmetric Extrusion and



Drawing—Part 1: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23**; Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 36**

**Ducts**  
An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts (78-WA/PTC-1) **P 655**  
Laminar Transport Phenomena in parallel Channels with a Short Flow Construction **HT 217**  
Molecular Gas Radiation in the Thermal Entrance Region of a Duct **HT 409**  
Time Optimum Control of a Two Capacity Thermal Environmental System With Louvers **DS 150**  
**Dudek, J. A.** Dynamics of Wobbling Symmetric Disk (BN) **AM 711**  
**Due-Date Constraints**  
Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**  
**Duffey, T. A.** Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**  
**Duffy, J.** An Alternative to Euclid's Algorithm (D) **MD 586**; Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**; Displacement Analysis of Spatial 7R Mechanisms Suitable for Constant-Velocity Transmission Between Parallel Shafts (78-DET-9) **MD 604**; Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 168**; The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel **MT 258**  
**Dukkipati, R. V.** A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**  
**Dumais, C.** Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **I 178**  
**Dunbar, J. B.** Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) **I 65**  
**Dundurs, J.** On the Barber Boundary Conditions for Thermoelastic Contact (78-WA/APM-33) **AM 849**; A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**; Thermoelastic Contact Between Bodies With Wavy Surfaces (79-WA/APM-35) **AM 854**  
**Dunn, M. G.** Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**  
**Duodenium**  
Fluid Mechanics of Longitudinal Contractions in the Small Intestine **BE 264**  
**Du Parquet, J.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190**; (D) **L 198**; (AC) **L 200**  
**du Plessis, M. P.** Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/PROD-11) **I 311**  
**Durban, D.** Large Strain Solution for Pressurized Elastoplastic Tubes (BN) **AM 228**  
**Durelli, A. J.** Optimum Hole Shapes in Finite Plates Under Uniaxial Load (DDM) **AM 691**  
**Durgin, W. W.** Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow (D) **F 206**; (AC) **F 207**  
**Durão, D. F. G.** Measurements Within Görtler Vortices **F 517**  
**Dust Layers**  
On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) **P 584**  
**Dust-Trash Removal**  
Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-TEX-2) **I 197**  
**Dändliker, R.** Extrapolation of Strain and Stress From Holographically Measured Surface Displacement **AM 581**  
**Dwell Time**  
Multistage Geared Geneva Mechanism (78-DET-16) **MD 41**  
**Dwell Systems**  
A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 83**  
**Dyad**  
On the Existence of Circle-Point and Center-Point Circles for Three-Precision-Point-Dyad Synthesis (78-DET-44) **MD 554**  
**Dynamic Accuracy**  
Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam

Manufacturing (77-WA/DE-3) **MD 108**  
Dynamic Accuracy of Profiling Mechanisms in Cam Manufacturing (D) **MD 519**  
**Dynamic Analysis**  
A Feedback Vibration Controller for Circular Saws **DS 44**  
Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmission (78-DET-89) **MD 256**  
Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/PROD-3) **I 295**  
**Dynamic Behavior**  
Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**  
Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-5) **MD 298**  
Fatigue Analysis of Offshore Structures **ERT 218**  
Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180**; (D) (AC) **L 188**  
Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31**  
**Dynamic Burning Rate**  
Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**  
**Dynamic Characteristics**  
Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129**; (D) **L 137**; (AC) **L 138**  
**Dynamic Compaction**  
Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**  
**Dynamic Compression**  
Mechanical Behavior of Metals in Dynamic Compression **MT 238**  
**Dynamic Control**  
Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) **DS 162**  
**Dynamic Data System**  
Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/PROD-16) **I 284**  
**Dynamic Displacement**  
Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**  
**Dynamic Entrainment**  
Vehicle-Follower Control for Dynamic Entrainment of Automated Guideway Transit Vehicles **DS 314**  
**Dynamic Equations**  
An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**  
**Dynamic Fields**  
Dynamic Crack-Tip Fields According to Deformation Theory (BN) **AM 707**  
**Dynamic Fracture**  
Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 168**  
The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel **MT 258**  
**Dynamic Load**  
Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**  
**Dynamic Loading**  
Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**  
**Dynamic Mechanical Systems**  
Topological Reaction Force Analysis (78-DET-58) **MD 192**  
**Dynamic Methods**  
Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**  
**Dynamic Models**  
Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 181**  
Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) **MD 258**  
**Dynamic Motion Time Response**  
Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**  
**Dynamic Phenomena**  
A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 83**  
**Dynamic Plasticity**  
A Tabular Summary of Some Experiments in Dynamic Plasticity **MT 231**  
**Dynamic Pressure Measurement Systems**  
Pressure Instrumentation for Gas Turbine Engines—A

Review of Measurement Technology (78-GT-148) **P 373**  
**Dynamic Problems**  
Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**  
**Dynamic Procedures**  
Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**  
**Dynamic Response**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 50**  
Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 106**  
Dynamic Response of a Membrane With Both Curved and Straight Line Boundaries **AM 667**  
Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**  
Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**  
Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**  
Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**  
Transient Response of Continuous Viscoelastic Structural Members **AM 685**  
**Dynamic Seismic Analysis**  
Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) **PVT 10**  
**Dynamic Spectra**  
Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**  
**Dynamic Stability**  
Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**  
Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**  
**Dynamic Stall**  
Water Tunnel Visualizations of Dynamic Stall **F 376**  
**Dynamic State Synthesis**  
Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 246**  
**Dynamic Stress**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**  
**Dynamic Stress-Intensity Factor**  
Diffraction of SH-Waves by an Edge Crack **AM 101**  
**Dynamic Systems**  
Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**  
An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**  
Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) **DS 99**  
Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**  
Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**  
Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) **DS 31**  
Indirect Control of the Forces of Constraint in Dynamic Systems **DS 355**  
Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**  
On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 206**  
A State Space Method for Optimal Design of Vibration Isolators **MD 309**  
Statistical Energy Analysis of Dynamical Systems: Theory and Application (BR) **Ap 172**  
**Dynamic Boundary Conditions**  
A Study of Penetrative Convection in Rotating Fluid **HT 261**  
**Dynamical Systems**  
On Some General Properties of Combined Dynamical Systems (D) (AC) **AM 964**

## Dynamics

- Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**
- Dynamics of Rolling-Element Bearings—Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) **L 293**; (D) (AC) **L 303**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) **L 305**; (D) (AC) **L 311**; Part III: Ball Bearing Analysis (78-Lub-32) **L 312**; Part IV: Ball Bearing Results (78-Lub-33) **L 319**
- Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**
- Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**
- On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**
- Optimization of Power Absorption From Sea Waves **ERT 145**
- A Simulation of the Dynamics of Counterpulsation **BE 105**

## Dynamometer

- Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/PROD-16) **I 264**

- Dyson, L. L. (author) Mode of Failure Investigations of Helicopter Transmissions (GR) **MD 176**

- Dzaislo, F. J. Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**; Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 98**

## E

### Earthquake Excitation

- A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **PVT 44**

### Earthquake Excitations

- Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) **PVT 21**

### Earthquakes

- Effects of Soil-Structure Interaction on Seismic Response of a Steel Gravity Platform **ERT 171**

- Eastwood, J. C. Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) **P 516**

- Eaton, J. K. Turbulent Flow Over a Plane Symmetric Sudden Expansion (D) (AC) **F 532**; A Wall-Flow-Direction Probe for Use in Separating and Reattaching Flows **F 364**

### Eccentricity Ratio

- Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

- Eckardt, D. Experimental Study on Flow in a Supersonic Centrifugal Impeller (D) **P 39**; (AC) **P 40**

- Eckhardt, H. D. Mathematical Modeling of Textile Weave Room Sound Propagation (78-Tex-3) **I 69**

### Economic Evaluation

- An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (78-WA/Enr-1) **P 213**

- Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

### Economic Trade-Off

- Capital Cost System Optimization of OTEC Power Modules **ERT 74**

### Economical Nonlinear Structural Analysis

- Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

### Edge Beams

- Layered Cylindrical Pressure Vessels (78-PVP-103) **PVT 80**

### Edge Boundary Conditions

- Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**

### Edge Crack

- Diffraction of SH-Waves by an Edge Crack **AM 101**
- The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

### Editorials

- Editorial **F 154**; **F 298**
- Publication Backlog **MD 169**
- Tribute to C. W. McLarnan **MD 361**
- Workshop Report **F 410**
- Edwards, D. K. Correlations for Natural Convection

- through High L/D Rectangular Cells (TN) **HT 741**;
- Molecular Gas Radiation in the Thermal Entrance Region of a Duct **HT 489**

- Elchhorn, R. Local Nonsimilarity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate **HT 642**; Method for Visualizing High Prandtl Number Heat Convection (TN) **HT 571**; Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid (TN) **HT 566**

### Eigenfrequencies

- Eigenfrequencies of Continuous Plates With Arbitrary Number of Equal Spans **AM 656**

### Eigensolutions

- Eigensolutions for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**

### Eigenstrains

- The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) **AM 568**

### Eigenvalue Approximations

- Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 203**

- Elstinger, K. Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**; Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**

- Elsas, H. S., Jr. Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**

### Ejection

- Effects of Additive Ejection on Lifting Hydrofoils (77-FE-27) **F 244**

- El Haddad, M. H. Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

- El-Wakil, M. M. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**; Natural Convection Heat Transfer in Moderate Aspect Ratio Enclosures **HT 655**

### Elastic Analysis

- An Elastic Analysis of Multitroll Endless Web Systems **DS 368**

### Elastic Beams

- The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

- A Remark on Lateral Buckling of a Uniform Beam (BN) **AM 596**

- A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**

### Elastic Bodies

- Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**

- Thermoelastic Contact Between Bodies With Wavy Surfaces (79-WA/APM-35) **AM 854**

### Elastic Chains

- Analysis of Massless Elastic Chains With Servo Controlled Joints **DS 167**

### Elastic Circular Plate

- Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**

### Elastic Connecting-Rod Bearing

- Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190**; (D) **L 198**; (AC) **L 200**

### Elastic Constants

- Determination of Elastic Constants for Human Femurs **BE 193**

### Elastic Cylinders

- Twisted-Pore Effect on Fluid Flow, Solid Deformation and Stress in a Poro-Elastic Cylinder **AM 784**

### Elastic Deformations

- Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 419**; (D) **L 423**

- Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**

### Elastic Dispersion

- Elastic Dispersion, Homogeneous Dispersive Media and an Application to Periodic Elastic Media (D) (AC) **AM 236**

### Elastic-Dynamic Behavior

- The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 89**

### Elastic Elliptic Cylinder

- Diffraction of SH-Waves by an Edge Crack **AM 101**

### Elastic Field

- The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) **AM 568**

### Elastic Half Plane

- A Rigid Punch Bonded to a Half Plane (79-WA/APM-38) **AM 844**

### Elastic Half Spaces

- Penetration of a Half Space by a Rectangular Cylinder (79-WA/APM-3) **AM 587**

- The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) **AM 577**

### Elastic Linkages

- A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**

- A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**

### Elastic Media

- Diffraction of Torsional Waves by a Flat Annular Crack in an Infinite Elastic Medium **AM 827**

- Response of a Rigid Sphere Embedded in an Elastic Medium to Random Disturbances (BN) **AM 951**

### Elastic Moduli

- Analysis of Properties of Fiber Composites With Anisotropic Constituents (79-WA/APM-6) **AM 543**

### Elastic/Perfectly Plastic Material

- A Finite-Element Model for Plane-Strain Plasticity (79-WA/APM-19) **AM 536**

### Elastic-Plastic Bending

- Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/PROD-6) **I 304**

### Elastic-Plastic Buckling

- Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) **PVT 216**

- Elastic and Elastic-Plastic Buckling of Internally Pressurized 2:1 Ellipsoidal Shells (ER) **PVT 112**

### Elastic-Plastic Models

- Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) **P 226**

### Elastic-Plastic Solutions

- Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

### Elastic Plates

- Thickness Oscillations in Deformed Elastic Plate **AM 663**

### Elastic Properties

- Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) **ERT 105**

### Elastic Rings

- Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**; (D) (AC) **AM 963**

- Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**

### Elastic Rotational Restraints

- Fundamental Frequency of Beams With Elastic Rotational Restraints (TB) **MD 711**

### Elastic Slabs

- Instability of a Fiber-Reinforced Elastic Slab Subjected to Axial Loads **AM 839**

### Elastic Solids

- Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids (BN) **AM 958**

### Elastic Springs

- Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**

### Elastic Supports

- Stability Threshold of Flexibly Supported Hybrid Gas Journal Bearings **L 451**

### Elastic Tubes

- Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**

- Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31**; (D) **AM 963**; (AC) **AM 964**

### Elastic-Viscoplastic Materials

- Uniaxial Cyclic Loading of Elastic-Viscoplastic Materials (79-WA/APM-30) **AM 805**

### Elastic Waves

- Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**

- Propagation of Elastic Waves in Rods With Variable Cross Section (BN) **AM 951**

- Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: SH Motion (79-WA/APM-5) **AM 625**
- Reflection and Transmission of Circularly Polarized Elastic Waves of Finite Amplitude (79-WA/APM-31) **AM 867**
- The Theory of Elastic Waves and Waveguides (BR) **AM 969**
- Elastically Loaded Material**  
Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**
- Elasticity**  
A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**  
Constitutive Equation of Lung Tissue Elasticity **BE 38**  
Elasticity Theory of Plates and a Refined Theory **AM 644**  
Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**  
Green's Functions for Two-Phase Transversely Isotropic Materials **AM 551**  
On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**
- Elasto-Plastic Analysis**  
Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) **PVT 210**
- Elasto/Plastic Tubes**  
Large Strain Solution for Pressurized Elasto/Plastic Tubes (BN) **AM 228**
- Elastodynamic Ray Theory**  
Acoustic Emission From a Brief Crack Propagation Event **AM 107**
- Elastodynamics**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**  
Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) **PVT 207**
- Elastohydrodynamic Contacts**  
The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) **L 266; (D) L 273; (AC) L 274**  
Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**  
A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) **L 258; (D) L 264, 265; (AC) L 265**  
Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) **L 251; (D) (AC) L 257**
- Elastohydrodynamic Film Thickness**  
An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (78-Lub-27) **L 327; (D) (C) L 337**
- Elastohydrodynamic Lubrication**  
Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231; (D) L 238; (AC) L 239**  
Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Modulus—II—Starved Conjunction (78-Lub-1) **L 92**
- Elastohydrodynamic Squeeze Films**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**
- Elastohydrodynamics**  
Elastohydrodynamics and Related Topics (Fifth Leeds-Lyon Symposium on Tribology) (FR) **L 398**
- Elbows**  
Two-Dimensional Laminar Flow in Elbows **F 278**
- Eldighiy, S. M.** Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 306**
- Electric Fields**  
Low Péclet Number Heat and Mass Transfer from a Drop in an Electric Field **HT 484**  
Small Reynolds Number Electro-Hydrodynamic Flow Around Drops and the Resulting Deformation (79-WA/APM-8) **AM 510**
- Electric Generation Systems**  
An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (76-WA/Enr-1) **P 213**
- Electric Power Generation**  
An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**
- Electrical Production**  
Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**
- Electrical Simulation**  
Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) **I 65**
- Electrochemical Grinding**  
Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/PROD-26) **I 285**
- Electrochemical Methods**  
Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall **F 121**
- Electrohydrodynamic Flow**  
Small Reynolds Number Electro-Hydrodynamic Flow Around Drops and the Resulting Deformation (79-WA/APM-8) **AM 510**
- Electromagnetic Feedback Control**  
A Feedback Vibration Controller for Circular Saws **DS 44**
- Electromagnetic Shields**  
Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**
- Electromechanical Vibration**  
An Analysis of Effects of Electromechanical Vibration on Selected Specimens (GR) **MD 175**
- Electrostatic Charge Parameter**  
Laminar Flow Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 306**
- Electrostatic Precipitators**  
On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) **P 584**
- Electrosurgical Procedures**  
Measurements of Temperature Distributions at Electro-Surgical Dispersive Electrode Sites **BE 66**
- Elevated Temperature Crack Growth Behavior**  
Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**
- Elevated Temperatures**  
Application of J-Integral to High-Temperature Crack Propagation—Part II—Fatigue Crack Propagation **MT 162**  
Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) (AC) **MT 176**  
Rate Equations for Elevated Temperature Creep **MT 396**  
Techniques Developed for Elevated Temperature Fracture Toughness Testing of Irradiated Materials in Thin Sections **MT 403**
- Elishakoff, I.** Eigenfrequencies of Continuous Plates With Arbitrary Number of Equal Spans **AM 656**
- Elkins, R. T.** Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) **P 556; (D) P 562**
- Elliott, J. L.** Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 248**
- Elliott, L.** Flow in a Whirling Rotor Bearing **AM 767**
- Ellipsoidal Inclusions**  
The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilational Eigenstrains (79-APM-29) **AM 568**
- Ellipsoidal Shells**  
Plastic Collapse and the Controlling Failure Pressures of Thin 2:1 Ellipsoidal Shells Subjected to Internal Pressure **PVT 64**
- Elliptical Contacts**  
Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) **L 92**
- Elliptical Cracks**  
Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**
- Ellis, F. V.** Remaining Creep or Stress-Rupture Life Under Nonsteady Temperature and Stress **MT 331**
- Ellis, R. W.** A Feedback: Vibration Controller for Circular Saws **DS 44**
- Elryin, F.** Effect of Cyclic Loading on the Yield Surface **PVT 59**
- Elongation**  
The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/PROD-18) **I 269**
- Elrod, H. G.** A General Theory for Laminar Lubrication With Reynolds Roughness **L 8**
- Elwell, R. C.** Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (D) **L 161; (AC) L 162**
- Embrittlement**  
The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**
- Embrittlement Solution**  
Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement **MT 98**
- Emergency Core Cooling**  
Investigation of Warm Prestress for the Case of Small <math>\Delta T</math> During a Reactor Loss-of-Coolant Accident (79-PVP-62) **PVT 298**
- Emery, A. F.** A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) **PVT 181**
- Emery, R. B.** Plug Flow of Bulk Solids Using Gas Pressure Control **I 85**
- Emery, S. A.** The Residual Strain Distribution Around a Fastener Hole Coldworked With a Tube Expander (TB) **MT 304**
- Emission Behavior**  
Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**
- Emission Combustor**  
Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**
- Emission Levels**  
Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**
- Emission Reduction**  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 84; (D) DS 89; (AC) DS 70**
- Emission Spectra**  
Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**
- Emissions**  
Acoustic Emission From a Brief Crack Propagation Event **AM 107**  
An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**  
Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**
- Emissivities**  
Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) **P 607**
- Empirical Flow Stress Formula**  
The Stress-Strain in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**
- Empirical Methods**  
A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384; (D) P 392-394; (AC) P 395**
- Emulsions**  
Transport of Oils as Oil-in-Water Emulsions (77-FE-26) **F 100**
- Enclosures**  
Band Radiation within Diffuse-Walled Enclosures—Part I: Exact Solutions for Simple Enclosures **HT 81; Part II: An Approximate Method Applied to Simple Enclosures** **HT 85**  
Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**  
The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 648**  
Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**  
Natural Convection Heat Transfer in Moderate Aspect Ratio Enclosures **HT 655**  
A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**  
Three-Dimensional Numerical Analysis of Transient Natural Convection in Rectangular Enclosures **HT 114**  
Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**
- End-Wall Boundary Layer**  
An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D) P 245; (AC) P 248**
- Energy Analysis**  
Statistical Energy Analysis of Dynamical Systems: Theory and Application **AP 172**
- Energy Conservation**  
Controlling and Measuring for Energy Conservation (F) **DS 5**
- Energy Consumption**  
Alternative Aircraft Fuels (78-GT-59) **P 155**
- Energy Conversion**  
Ocean Thermal Energy Conversion (BR) **ERT 206**



## Energy Criterion

On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**

A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**

## Energy Principle

Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**

## Energy Recovery

The Economics of Energy Recovery From Industrial Waste Incineration **ERT 260; (D) ERT 268; (AC) ERT 269**

## Energy Release

Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 185**

## Energy Resources

Measurement of Energy Resources **DS 16**

Mining Technology for Energy Resources: Advances for the Eighties (BR) **ERT 206**

Optimization of Power Absorption From Sea Waves **ERT 145**

## Energy Sources

Onset of Convection in Fluid Layers with Non-uniform Volumetric Energy Sources (79-HT-100) **HT 666**

Power Extraction From Ocean Surface Waves **ERT 141**

## Energy Storage

Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**

Latent Heat-of-Fusion Energy Storage: Experiments on Heat Transfer from Cylinders During Melting (78-HT-47) **HT 453**

## Energy Storage Device

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

## Energy Technologies

Emerging Energy Technologies (BR) **ERT 206**

## Energy Transfer

The Transient and Stability Behavior of a Natural Convection Loop **HT 684**

## Energy Value

The Relative Value of Energy Derived From Municipal Refuse **ERT 251; (D) ERT 255-259; (AC) ERT 258**

## Energy Variations

Energy Variations in Notch Stress Analysis (BN) **AM 952**

Engel, P. K. Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) **P 598**

## Engine Control System

A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305; (D) P 313; (AC) P 314**

## Engine Cycle Fatigue Rate

Flight and Propulsion Control Integrated for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**

## Engine Design Modifications

An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**

## Engine Development

Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**

## Engine Ducts

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Cell Operational Experience (78-GT-150) **P 397; (D) P 404**

## Engine Health Monitoring System

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

## Engine Inlet Design

Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) **P 290**

## Engine Knock

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64; (D) DS 68; (AC) DS 70**

## Engineering Alloys

Creep Failure Criteria for High Temperature Alloys **MT 374**

## Engineering Design

Dynamic Accuracy of Profiling Mechanisms in Cam Manufacturing (D) **MD 519**

Engineering Design Handbook, Maintainability Engineering Theory and Practice (GR) **MD 175**

Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 386**

Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-6) **MD 380; (D)**

(AC) **MD 385**

## Engineering Design Education

International Trends in Engineering Design Education—A Partial View **MD 540**

## Engineering Plastics

Reliability as a Materials Property (78-WA/Mat-1) **MT 27**

## Engineering Statistics

Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) **P 662**

## Engineering Surfaces

Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) **L 409; (D) (AC) L 418**

Enniss, D. O. Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**

Ensign, C. R. A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data **MT 317**

## Entrance Regions

Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 309**

## Entropy Generation

A Study of Entropy Generation in Fundamental Convective Heat Transfer **HT 718**

## Envelope Curvature Theory

Higher Order, Planar Tangent-Line Envelope Curvature Theory (78-DET-21) **MD 563**

## Environmental Systems

Time Optimum Control of a Two Capacity Thermal Environmental System With Louvers **DS 150**

Epelboin, I. Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall **F 121**

## Epicyclic Gear Pump

Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 449**

## Epicyclic Gear Trains

Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) **MD 625**

## Epicyclic Rotary Pump Mechanism

Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**

## Epoxy-Resin Composites

Residual Thermal Stresses Due to Cool-Down of Epoxy-Resin Composites (79-WA/APM-9) **AM 563**

## Equations of Motion

Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**

Resonant Excitation of a Spinning, Nutating Plate **AM 132**

Transient Response of Continuous Viscoelastic Structural Members **AM 585**

## Equipment Reliability

Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**

## Equivalent Linearization

Linearization Equations for Vibration Induced by Oscillatory Flow (BN) **AM 948**

Ercan, Y. Time Optimum Control of a Two Capacity Thermal Environmental System With Louvers **DS 150**

Erdogan, F. The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/APM-16) **AM 618**

Erdman, A. G. A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154; A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) MD 138; On the Existence of Circle-Point and Center-Point Circles for Three-Precision-Point-Dyad Synthesis (78-DET-44) MD 554; Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) BE 124**

Erdogan, F. The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

Eringen, A. C. Penetration of a Half Space by a Rectangular Cylinder (79-WA/APM-3) **AM 587**

## Erosion

Velocity Exponent for Erosion and Noise Due to Cavitation **F 60**

## Erosion-Corrosion Effects

Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-solids Fluidized-Bed Coal Combustor (77-WA/CD-1) **P 1; (D) P 7; (AC) P 8**

Ertürk, T. Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites

(78-WA/Mat-2) **MT 3**

## Erythrocyte Populations

Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures **BE 213**

Escudier, M. Estimation of Pressure Loss in Ring-Type Exit Chambers **F 511**

Escudier, M. P. Observation of Flow in a Ring Inlet Chamber **F 135**

Eshel, A. Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 96**

Espana, M. Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**

## Ethanol

An Evaporating Ethanol Meniscus, Part II: Analytical Studies (Er) **HT 575**

## Ethanol Meniscus

An Evaporating Ethanol Meniscus—Part I: Experimental Studies **HT 55; Part II: Analytical Studies HT 59**

Etsion, I. Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (D) (AC) **L 282; Hydrodynamic Effects in a Misaligned Radial Face Seal (78-Lub-12) L 283; (D) L 290; (AC) L 291; Observation of Self-Excited Wobble in Face Seals (TB) L 526; Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) L 81; Stiffness of Straight and Tapered Annular Gas Path Seals (D) L 354; (AC) L 355**

## Euclid's Algorithm

An Alternative to Euclid's Algorithm (78-DET-41) **MD 582; (D) MD 586**

## Evaluated Loss Calculation

Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

Evans, D. M. Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**

## Evaporation

Droplet Evaporation **HT 441**

An Evaporating Ethanol Meniscus—Part I: Experimental Studies **HT 55; Part II: Analytical Studies HT 59**

Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**

A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (TN) **HT 178**

## Exact Differential Equations

Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/APM-25) **AM 895**

## Exhaust Gases

Water Production from Exhaust Gases of Steam Power Plants (TB) **P 677**

## Exchangers

Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) **P 516**

## Excitation

Excitation of Rotationally Periodic Structures (79-WA/APM-23) **AM 878**

Upper Bounds for Amplitudes of Harmonic Components of Excitation (BN) **AM 716**

## Exhaust Diffuser

Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**

## Exhaust Emissions

Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**

## Exhaust Gases

Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) **P 598**

## Exhaust Steam

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGCPwr-14) **P 483**

## Exit Guide Vanes

Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

## Expansion Chamber

Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**

## Expansions

Turbulent Flow Over a Plane Symmetric Sudden Expansion **F 348**

## Experimental Boilers

Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615; (D) (AC) P 619**

## Experimental Investigation

An Experimental Investigation of the Effect of Misalignment



and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**

#### Experimental Program

Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 2: Experiments (79-APM-4) **AM 52**

#### Experimental Study

Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsh Tube **HT 300**

#### Exploratory Drilling

Measurement of Energy Resources **DS 18**

#### Explosive Boiling

Nucleation Processes in Large Scale Vapor Explosions **MT 280**

#### Explosives Containment Vessel

Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) **PVT 342**

#### Explosive Fracture

Calculational Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**

#### Exposure Conditions

Corrosion Under Random Exposure Conditions (TB) **MT 306**

#### Extended Transfer Matrix Method

On The Torsional Vibration of Branched Systems Using Extended Transfer Matrix Method (77-WA/DE-4) **MD 546**

#### Extension

Mechanical Properties of Human Lumbar Spine Motion Segments—Part 1: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 48**; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53**

#### External Axial Flow

Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**

#### External Flow

Average Nusselt Numbers for External Flows (TN) **HT 734**

#### External Flow Source

A Simulation of the Dynamics of Counterpulsation **BE 105**

#### External Pressure

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **L 178**

#### External Pressure Load

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

#### Externally Pressurized Bearings

A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) **L 242**

#### Externally Pressurized Journal Bearings

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**

#### Extinction Limits

Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**

#### Extrapolation Methods

A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data **MT 317**

#### Extruding Method

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**

#### Extrusion

Ductile Fracture in Axisymmetric Extrusion and Drawing—Part 1: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23**; Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 36**

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **L 319**

#### Extrusion Process

A Study of Multiple Hole Extrusion **MT 135**

#### Extrusion Process

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **L 116**

#### Eye Disease

Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 287**

Exz, M. Optimization of Power Absorption From Sea Waves **ERT 145**

## F

Fabri, J. Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**

#### Fabric Filtration

Electrical Stimulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) **I 85**

#### Fabrication Techniques

Design, Fabrication and Field Test Performance of Slug-Type Diamond Compacts Oil Bits **ERT 41**

#### Fabrics

Finite Biaxial Extension of Completely Set Plain Woven Fabrics **AM 651**

#### Face Seals

Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) **L 275**; (D) (AC) **L 282**

Hydrodynamic Effects in a Misaligned Radial Face Seal (78-Lub-12) **L 283**; (D) **L 290**; (AC) **L 291**

Observation of Self-Excited Wobble in Face Seals (TB) **L 526**

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**

Faeth, G. M. Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**

#### Failure Analysis

Fatigue Analysis of Offshore Structures **ERT 218**

#### Failure Experiences

Materials Problems Experienced at the Synthane Coal-Gasification Pilot Plant **MT 105**

#### Failure Levels

Reliability as Materials Property (78-WA/Mat-1) (D) **MT 177**

#### Failure Patterns

Multi-Tool Machining Analysis—Part 1 Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**

#### Failure Pressures

Plastic Collapse and the Controlling Failure Pressures of Thin 2:1 Ellipsoidal Shells Subjected to Internal Pressure **PVT 64**

#### Failure Probabilities

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

Fakory, M. Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods **F 429**; (D) **F 434**; (AC) **F 435**

#### Fan-Jet Pressure Nozzles

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

#### Fan Jets

Drop-Size Distributions of Bingham Liquid (PAINT) Sprays Produced by Fan-Jet Pressure Nozzles **I 449**

#### Fan System

Propulsion System Considerations for the Subsonic V/STOL (78-GT-57) **P 228**

Fang, S. L. S. Time-Domain Structural Response Simulation in a Short-Crested Sea **ERT 270**

#### Fans

A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) **P 670**

Fantino, B. Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 196**; (D) **L 198**; (AC) **L 206**

#### Fast Flux Test Facility

A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) **P 647**

The Value of Prototype Testing in the Development of the In-Vessel Handling Machine for FFTF (78-WA/NE-3) **P 651**

#### Fast Neutron Scattering Technique

Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**

#### Fastener Holes

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

The Residual Strain Distribution Around a Fastener Hole Coldworked With a Tube Expander (TB) **MT 304**

#### Fatigue

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

Statistical Methods for Creep, Fatigue and Fracture Data Analysis **MT 344**

Verification of Specimens for Low-Cycle Fatigue and Cyclic Plasticity Testing **PVT 321**

#### Fatigue Conditions

Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analyses of Nuclear Reactor Vessels (79-PVP-16) **MT 182**

Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) (AC) **MT 178**

Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) **MT 224**

Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) **MT 191**

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

Fatigue Crack Growth of Stainless Steel Piping in a Pressurized Water Reactor Environment **PVT 73**

Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 190**

#### Fatigue-Crack Growth Behavior

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

#### Fatigue Crack Growth Model

Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53**; (D) (AC) **MT 58**; (Er) **MT 153**

#### Fatigue Crack Propagation

Application of J-Integral to High-Temperature Crack Propagation—Part II—Fatigue Crack Propagation **MT 162**

Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**

The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 205**

Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

The Influence of Inclusions on the Toughness and Fatigue Properties of A516-70 Steel **MT 265**

Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation **MT 275**

The Statistical Nature of Fatigue Crack Propagation **MT 148**

#### Fatigue Crack Propagation Resistance

50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 86**

#### Fatigue Damage

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) **P 563**

#### Fatigue Data

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

#### Fatigue Design Curves

Development of Fatigue Design Curves for Pressure Vessel Alloys Using a Modified Langer Equation **PVT 292**

#### Fatigue Failure

Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171**; (D) **L 177**; (AC) **L 178**

#### Fatigue Life

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

#### Fatigue Rate

Flight and Propulsion Control Integrated for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**

#### Fatigue Strength

Analysis of Misalignment in the Tension Test **MT 68**

The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**

Reliability as a Materials Property (78-WA/Mat-1) **MT 27**

#### Fatigue Tested Aluminum Sheet

A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 80**

Faupel, J. H. Pressure Vessels of Noncircular Cross

- Section (Commentary on New Rules for ASME Code) **PVT 255**
- Fauske, H. K.** Nucleation Processes in Large Scale Vapor Explosions **HT 280**
- Fawzy, I.** A Simplified Stability Criterion for Nonconservative Systems (Er) **AM 719**
- Feed Pump Turbine Drivers**  
Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**
- Feedback Control Systems**  
Experimental Investigation of a Variable Geometry, Radial Ejector (79-WA/FE-8) **F 491**
- Feedback Controller**  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64**; (D) **DS 99**; (AC) **DS 70**
- Feedback System**  
Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers With Positive Feedback (78-WA/DSC-3) (TB) **DS 77**
- Feedback Vibration Controller**  
A Feedback Vibration Controller for Circular Saws **DS 44**
- Feedforward Concept**  
On the Optimal Digital State Vector Feedback Controller With Integral and Preview Actions **DS 172**
- Fenster, R.** Higher Pump Pressures Can Reduce Drilling Costs **ERT 59**
- Fetjoo, L.** Heat Transfer in Composite Solids with Heat Generation **HT 137**
- Faimley, C. R., Jr.** Recent WRC Bulletins **PVT 336**
- Fernandes, J. H.** The Relative Value of Energy Derived From Municipal Refuse (D) **ERT 256**; (AC) **ERT 258**
- Ferritic Materials**  
Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**
- Ferritic Steels**  
The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**
- Ferromagnetic Vehicle Suspensions**  
Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Lift and Guidance **DS 217**
- Fiber Cross Sections**  
Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal View (78-Text-1) **159**
- Fiber Filaments**  
Melt Spinning of Fibers: Effect of Air Drag (78-Text-7) **173**
- Fiber Processing**  
Dust-Trap Removal by the SHRC Tuft-To-Yarn Processing System (78-Text-2) **1167**
- Fiber Reinforced Composites**  
Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**
- Fiber-Reinforced Material**  
Consolidation in Transversely Isotropic Solids **AM 65**
- Fiber Reinforcement**  
Instability of a Fiber-Reinforced Elastic Slab Subjected to Axial Loads **AM 639**
- Fiber Sizes**  
Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Text-9) **154**
- Fibers**  
Analysis of Properties of Fiber Composites With Anisotropic Constituents (79-WA/APM-6) **AM 543**
- Fichter, E. F.** Degree of the Input-Output Equations of Certain Geared Five-Bar Mechanisms (78-DET-27) **MD 471**
- Fictitious Noise**  
A Technique for Compensating the Filter Performance by a Fictitious Noise (D) (AC) **DS 275**
- Field Duty Cycles**  
A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) **MD 656**
- Field Engineering**  
Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) **ERT 128**
- Field Stressors**  
Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**
- Field Testing**  
National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**
- Filament Stress**  
Contractile Filament Stress in the Left Ventricle and its Relationship to Wall Stress **BE 225**
- Fillet Size**  
Fillet Size in a Liquid Jet (79-FE-1) **F 105**; (D) **F 108**
- Film Bearings**  
Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 126**
- Film Cooling**  
Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-136) **P 298**
- Film Cooling Effectiveness for Injection from Multihole Holes** (78-GT-32) **P 101**
- Gas Turbine Combustor Cooling by Augmented Backside Convection** (78-GT-33) **P 109**
- On the Nature of Jets Entering a Turbulent Flow Part B—Film Cooling Performance** **P 466**
- Film Damping**  
Squeeze Film Damping of Non-Newtonian Fluids **L 516**
- Film Evaporation**  
Experimental Study of Evaporation and Breakdown of Thin Liquid Films Driven by Shear Stress (77-WA/HT-7) **HT 712**
- A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (Er)** **HT 375**
- Film Lubrication**  
A Thermohydrodynamic Analysis of Journal Bearings **L 21**
- Film Temperature**  
Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**
- Film Thickness**  
Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220**; (D) **L 229**; (AC) **L 230**
- Effect of Geometry on Hydrodynamic Film Thickness** (78-Lub-24) **L 231**; (D) **L 236**; (AC) **L 239**
- Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction** (78-Lub-1) **L 92**
- Numerical Solution of the Planar Hydrostatic Foil Bearing** (78-Lub-23) **L 88**
- Optical Analysis of Porous Metal Bearings** (78-Lub-29) **L 99**
- An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing** (78-Lub-27) **L 327**; (D) (C) **L 337**
- Fimsley, C. R., Jr.** How the Welding Industry Spends Its R&D Dollars **PVT 336**; WRC Will Distribute Welding Information Services; Can Fracture Mechanics Determine Defect Tolerance?; Fitness-for-Purpose Approach to Codes **PVT 97**
- Flims**  
Heat Transfer in the Meniscus Thin-Film Transition Region **HT 543**
- Filter Performance**  
A Technique for Compensating the Filter Performance by a Fictitious Noise (D) (AC) **DS 275**
- Filter Effects**  
Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171**; (D) **L 177**; (AC) **L 178**
- Filteration Process**  
The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**
- Fin Tubes**  
Evaporative Heat Transfer and Pressure Drop Performance of Internally-Finned Tubes with Refrigerant 22 **HT 447**
- Findley, W. N.** Creep of Metals and Plastics Under Combined Stresses, A Review **MT 365**
- Finite Amplitude**  
Reflection and Transmission of Circularly Polarized Elastic Waves of Finite Amplitude (79-WA/APM-31) **AM 667**
- Finite Bearing**  
An Analytical Study of Starved Porous Bearings **L 38**
- Finite Biaxial Extension**  
Finite Biaxial Extension of Completely Set Plain Woven Fabrics **AM 651**
- Finite Crack Propagation**  
Acoustic Emission From a Brief Crack Propagation Event **AM 107**
- Finite-Difference Methods**  
A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**
- Finite-Difference Solution of Free Convection Problem with Non-uniform Gravity (TN)** **HT 745**
- A Study of Penetrative Convection in Rotating Fluid** **HT 261**
- Finite-Difference Numerical Analysis**  
Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction **HT 217**
- Finite-Difference Solution Algorithm**  
Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**
- Finite Difference Technique**  
Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**
- Finite Elasticity Solutions**  
Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**
- Finite Element-Aligning Method**  
Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**
- Finite-Element Analysis**  
Finite Element Analysis in Fluid Dynamics (BR) **AM 966**
- Finite Element Analysis of Mindlin Plates** (78-WA/DE-6) **MD 619**
- Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids** **AM 519**
- A Three-Dimensional Finite Element Analysis of the Double-Torsion Test** **PVT 328**
- Finite Element Calculation Program**  
An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**
- Finite Element Method**  
An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **1159**
- Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs** (78-WA/RT-5) **1376**
- Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems** (78-DET-37) **MD 210**
- Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue** (78-WA/Mat-5) **MT 34**
- Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis** (78-PVP-70) **PVT 134**
- Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone** (78-Pet-77) **ERT 105**
- A Thermohydrodynamic Analysis of Journal Bearings** **L 21**
- Finite-Element Models**  
A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) **BE 176**
- A Finite-Element Model for Plane-Strain Plasticity** (79-WA/APM-19) **AM 536**
- Finite Element Results**  
National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**
- Finite Element Routine**  
A Study of Cold Strip Rolling **MT 129**
- Finite Element Shell Model**  
A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**
- Finite Element Stress Analysis**  
Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**
- Design of an Extreme Crash Resistant Transport Package** (78-DE-W-4) **MD 342**
- Finite Journal Bearings**  
Adiabatic Solutions for Finite Journal Bearings **L 492**
- Finite Line Elements**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**
- Finite Media**  
A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection **HT 592**
- Finite Point Sets**  
Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**
- Finite Sets**  
Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**
- Finite Strain**  
On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**
- Finite Width Effect**  
Effect of Finite Width on Heat Transfer and Fluid Flow about

- an Inclined Rectangular Plate **HT 199**
- Finned Tubes**  
Analysis of Turbulent Flow and Heat Transfer in Internally Fined Tubes and Annuli **HT 29**
- Fins**  
Condensation on an Extended Surface **HT 434**  
Fin Thickness for an Optimized Natural Convection Array of Rectangular Fins (TN) **HT 564**  
Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**  
Radiant Exchange for a Fin and Tube Solar Collector (TN) **HT 185**  
Triangular Fin Performance by the Heat Balance Integral Method (TN) **HT 562**
- Fire Safety Design**  
Response of Building Components to Heating in a Fire **HT 365**
- Fireside Ash Deposition**  
Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) **P 506**
- First-Order Solution**  
On the Design of Thin Subsonic Airfoils **AM 6**
- First-Passage Probability**  
Nonstationary Narrow-Band Response and First-Passage Probability (79-WA/APM-18) **AM 919**
- Fisher, D. G.** Experience With Experimental Applications of Multivariable Computer Control **DS 100**
- Fisher, W.** A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (D) **P 393**; (AC) **P 395**
- Fitch, E. C.** (author) Introduction to Fluid Logic (BR) **DS 83**
- Fitzgerald, C. S.** Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**
- Five-Bar Mechanisms**  
Degree of the Input-Output Equations of Certain Geared Five-Bar Mechanisms (78-DET-27) **MD 471**
- Fixed Axes of Rotation**  
Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**
- Flack, R. D.** The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 648**
- Flack, R. D., Jr.** Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**
- Flame Stabilization**  
Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**
- Flange Contact**  
Nonlinear Wheelset Forces in Flange Contact—Part 1: Steady State Analysis and Numerical Results **DS 238**; Part 2: Measurements Using Dynamically Scaled Models **DS 247**
- Flanges**  
Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9**; Part II: Applications (77-WA/NE-7) **P 16**
- Flank Wear**  
On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**
- Flap Lapping**  
Construction of Three-Workpiece Lapping Process (78-WA/PROD-7) **I 255**
- Flat Plate Blades**  
A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**
- Flat Plate Enclosures**  
Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**
- Flat Plates**  
Low-Velocity Heat Transfer to a Flat Plate in the Presence of a Corona Discharge in Air (78-WA/HT-47) **HT 157**  
On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**  
Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**
- Flat Radial Jet**  
The Laminar Flat Radial Jet of an Incompressible Power Law Fluid (BN) **AM 210**
- Flat Surface Grinding**  
Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) **I 135**; Part II: The Force Equilibrium **I 141**
- Flatjacks**  
Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice **ERT 196**
- Flattened Surface Crack**  
A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) **PVT 181**
- Flaws**  
Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (Er) **MT 153**
- Fleming, D. P.** Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) **L 349**; (D) **L 354**; (AC) **L 355**
- Flexible Cylinders**  
Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**  
An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) **F 292**; (AC) **F 293**
- Flexible Damped Support**  
A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) **L 242**
- Flexible Multibody Systems**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 50**
- Flexible Piping System**  
Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**
- Flexible Rotors**  
Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304**
- Flexibility**  
Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) **PVT 249**
- Flexibility Parameter**  
Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**
- Flexion**  
Mechanical Properties of Human Lumbar Spine Motion Segments—Part 1: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 46**; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53**
- Flexural Vibrations**  
Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**  
Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**
- Flight Control Integration**  
Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**
- Flight Hardware Development**  
Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**
- Float Configurations**  
Optimization of Power Absorption From Sea Waves **ERT 145**
- Float Devices**  
Power Extraction From Ocean Surface Waves **ERT 141**
- Floating Modules**  
Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) **ERT 167**
- Flören, S.** Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement **MT 98**
- Florschuetz, L. W.** Heat Transfer Characteristics for Inline and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 526**
- Flow**  
Airfoil Design in Subcritical and Supercritical Flows **AM 761**  
Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**  
Analysis of Turbulent Flow and Heat Transfer in Internally Fined Tubes and Annuli **HT 29**  
Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**  
Average Nusselt Numbers for External Flows (TN) **HT 734**  
Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) **AM 483**  
Buoyancy Induced Fluid Motions Characteristic of Applications in Technology—The 1978 Freeman Scholar Lecture **F 5**
- Calculation of Mean Temperature Difference in Air-Cooled Cross-Flow Heat Exchangers **HT 511**  
A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**  
Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**  
Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**  
Compressibility Effects in Cavity Flows **F 53**  
Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**  
Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**  
Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440**; (D) **P 448**; (AC) **P 448**  
Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**  
Convective Heat Transfer of Laminar Droplet Flow in Thermal Entrance Region of Circular Tubes **HT 480**  
Convective Heat Transfer in Porous Media (78-HT-45) **HT 507**  
Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) **P 290**  
Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**  
Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**  
Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**  
The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**  
Effects of Additive Ejection on Lifting Hydrofoils (77-FE-27) **F 244**  
Effects of Mass Transfer and Free-Convection Currents on the Flow Past an Impulsively Started Vertical Plate **AM 757**  
Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 705**  
Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) **ERT 112**  
An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall in Plane-Wall Diffusers **F 181**  
An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) **F 292**; (AC) **F 293**  
Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33**; (D) **P 39**; (AC) **P 40**  
Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 300**  
Factors Influencing Power Loss of Tilling-Pad Thrust Bearings (78-Lub-22) **L 154**; (D) **L 161**; (AC) **L 162**  
A Finite-Element Model for Plane-Strain Plasticity (78-WA/APM-19) **AM 536**  
Flow Induced Vibration (BR) **MD 6**  
Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow **F 206**; (D) **F 206**; (AC) **F 207**  
On the Flow Regimes of Downhole Flow of a Gas-Particle Mixture (D) **F 291**; (AC) **F 292**  
Flow through Successive Enlargement, Turning, and Contraction—Pressure and Fluid Flow Characteristics (TN) **HT 554**  
Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**  
Flow in a Whirling Rotor Bearing **AM 767**  
Fluid-Film Flows of Differential Fluids of Complexity  $n$  Dimensional Approach—Applications to Lubrication Theory **L 140**  
Fluid Temperature and Mixed Convection Effects in Hot-Wire Measurements of Natural Convection Flows (BN) **AM 231**  
Forced Convection Heat Transfer on Heated Bottom Surface of Cavity **HT 475**  
Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**  
Frictional Resistance of Enclosed Rotating Cones With Superposed Throughflow **F 259**  
Fully Implicit Algorithms for Solving Partial Differential



Equations (D) (AC) **F 289**  
 A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164**; (D) (AC) **L 170**  
 A Fundamental Criterion for the Application of Rotor Casing Treatment **F 237**  
 Gravity Flow of Granular Materials in Conical Hoppers (79-WA/APM-20) **AM 529**  
 Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**  
 Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**  
 Heat Transfer Characteristics for Inline and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 526**  
 Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube **HT 23**  
 Heat Transfer in the Meniscus Thin-Film Transition Region **HT 543**  
 Hydromagnetic Flow Over a Conducting Thick Porous Plate With Hall Effects (BN) **AM 220**  
 The Influence of Geometric Asymmetry on the Flow Downstream of Row of Jets Discharging Normally into a Free Stream (TN) **HT 183**  
 The Interaction of Solid or Liquid Particles and Turbulent Fluid Flow Fields—A Numerical Simulation **F 265**  
 An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **I 147**  
 Inviscid Solution for the Problem of Free Overfall **AM 1**  
 An Isentropic Streamtube Model for Flashing Two-Phase Vapor-Liquid Flow (Er) **HT 375**  
 Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 76**  
 Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 88**  
 Laminar Boundary Layer on a Finite Disk in a Rotating Compressible Isothermal Flow **F 166**  
 Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers **HT 151**  
 Laminar Compressible Flow Over a Stationary Disk in a Rotating Cylinder **F 173**  
 On Laminar Dispersion for Flow Through Round Tubes (79-WA/APM-14) **AM 750**  
 The Laminar Far Wake Flow of a Non-Newtonian Power-Law Fluid **F 331**  
 Laminar Flow of Suspensions in the Entrance Region of a Diffuser (78-FE-8) **F 309**  
 Laminar Transport Phenomena in parallel Channels with a Short Flow Construction **HT 217**  
 Linearization Equations for Vibration Induced by Oscillatory Flow (BN) **AM 946**  
 Linearized k- $\epsilon$  Analysis of Free Turbulent Mixing in Streamwise Pressure Gradients With Experimental Verification **AM 493**  
 Local Nonlinearity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate **HT 542**  
 Lubrication Flow of a Particle-Fluid Mixture (BN) **AM 211**  
 Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**  
 Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**  
 Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface **HT 211**  
 Mechanism of Heat and Momentum Transfer of Combined Free and Forced Convection with Opposing Flow (TN) **HT 573**  
 On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 288**  
 Modeling Hydroelastic Vibrations (BR) **AM 237**  
 Molecular Gas Radiation in the Thermal Entrance Region of a Duct **HT 489**  
 Natural Convection of Mercury in a Magnetic Field parallel to the Gravity **HT 227**  
 Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 308**  
 On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction **P 459**; Part B—Film Cooling Performance **P 466**  
 Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31**; (D) **AM 963**; (AC) **AM 964**  
 Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) **F 251**

Numerical Methods in Laminar and Turbulent Flows (BR) **AM 967**  
 Numerical Simulation of Particulate Motion in Turbulent Gas-Solid Channel Flow (76-WA/FE-37) **F 319**  
 Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) **HT 171**  
 Numerical Solutions of Nonsteady Two-Dimensional Transonic Flows **F 341**  
 A Numerical Study of the Laminar Viscous Incompressible Flow Through a Pipe Orifice (D) **F 289**; (AC) **F 290**  
 Numerical Study of the Steady Axisymmetric Flow Through a Disk-Type Prosthetic Heart Valve in an Aortic-Shaped Chamber **BE 196**  
 Observation of Flow in a Ring Inlet Chamber **F 135**  
 Open-Loop Thermosyphons with Geological Applications (79-HT-64) **HT 677**  
 Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**  
 Performance Prediction for an Axial Flow Hydraulic Transmission (78-WA/OCE-5) **I 434**  
 Periodically Unsteady Flow in an Imbedded Stage of a Multistage Axial-Flow Turbomachine (78-GT-6) **P 42**  
 Predicted Secondary Flows in Triangular Array Rod Bundles (79-WA/FE-2) **F 354**; (D) (AC) **F 362**  
 Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate **MT 248**  
 Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**  
 On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets (78-HT-21) **HT 532**  
 Pressure Pulse Propagation in Two-Component Slug Flow **F 44**  
 The Propagation of Boiling Boundary Phase-Change Fronts in Moving Fluids (78-WA/FE-18) **F 270**  
 Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**  
 Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) **HT 376**  
 Radiative Transfer in Hartmann MHD Flow (78-HT-18) **HT 502**  
 Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**  
 REVIEW—Unsteady Boundary Layers, Separated and Attached **F 29**  
 A Reynolds Stress Model for Flows With Drag Reduction **F 159**  
 Small Reynolds Number Electro-Hydrodynamic Flow Around Drops and the Resulting Deformation (79-WA/APM-8) **AM 510**  
 The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**  
 Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**  
 Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) **F 230**; (D) **F 235**; (AC) **F 236**  
 Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) **HT 381**  
 Swirling Flow Through Annular Diffusers With Conical Walls **F 224**  
 Symmetric Sink Flow Between Parallel Plates (Er) **F 390**  
 Symmetrical Velocity Profiles for Jeffery-Hamel Flow (BN) **AM 214**  
 A Thermohydrodynamic Analysis of Journal Bearings **L 21**  
 Torque Characteristics for Spherical Annulus Flow **F 284**  
 Trajectories of Single and Double Jets Injected into a Crossflow of Arbitrary Velocity Distribution **F 217**  
 The Transient and Stability Behavior of a Natural Convection Loop **HT 684**  
 Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**  
 Turbulent Boundary Layer Heat Transfer on Curved Surfaces **HT 521**  
 Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 61**  
 Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**  
 Two-Dimensional Laminar Flow in Elbows **F 276**  
 Two-Phase Flow on the Shell-Side of a Segmentally Baffled Shell-and-Tube Heat Exchanger (77-WA/HT-22) **HT 38**  
 Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**

Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water **HT 313**  
 Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 660**  
 Vortex Motions Induced by V-Grooved Rotating Cylinders and Their Effect on Mixing Performance (79-FE-2) **F 186**  
 A Wall-Flow-Direction Probe for Use in Separating and Reattaching Flows **F 364**  
**Flow Analysis**  
 An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145**; (D) **L 152**; (AC) **L 153**  
 Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**  
**Flow Angles**  
 An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233**; (D) **P 245**; (AC) **P 248**  
**Flow Behavior**  
 A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**  
**Flow Boiling**  
 Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**  
 On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**  
**Flow Calculation**  
 A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow. Part II—Stagnation Pressure Losses in a Rectangular Elbow (79-WA/FE-5) **F 423**; (D) (AC) **F 428**  
**Flow Channel**  
 Griffith Diffusers **F 473**  
**Flow Coefficient**  
 A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384**; (D) **P 392-394**; (AC) **P 395**  
**Flow Conditions**  
 Experimental Investigation of a Variable Geometry, Radial Ejector (79-WA/FE-8) **F 191**  
 Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**  
**Flow Contours**  
 Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**  
**Flow Devices**  
 Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers With Positive Feedback (78-WA/DSC-3) (TB) **DS 77**  
**Flow Direction**  
 Pressure Instrumentation for Gas Turbine Engines—a Review of Measurement Technology (78-GT-148) **P 373**  
**Flow Distribution**  
 Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**  
**Flow Fields**  
 Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**  
 A Study of Penetrative Convection in Rotating Fluid **HT 261**  
**Flow Filter**  
 Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171**; (D) **L 177**; (AC) **L 178**  
**Flow Friction Behavior**  
 Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**  
**Flow-Induced Motions**  
 An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) **F 292**; (AC) **F 293**  
**Flow Measurements**  
 Laminar Fluid Flow Measurements Employing a White Light Fringe Image Velocimeter (WIV) (BN) **AM 218**  
 Measurements Within Görtler Vortices **F 517**  
**Flow Mechanisms**  
 Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23**; (D) **P 29**; (AC) **P 30**  
**Flow Model**  
 Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220**; (D) **L 229**; (AC) **L 230**  
**Flow Oscillations**  
 An Experimental Study of Thermally-Induced Flow Oscillations in Supercritical Helium **HT 9**



## Flow Parameters

Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 69**

## Flow Path

Experimental Investigation of Unsteady Phenomena in Vaned Radial Diffusers (78-GT-23) **P 52; (D) P 59; (AC) P 60**

## Flow Patterns

Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**

A Study of Multiple Hole Extrusion **MT 135**

Velocity Distributions and Turbulence Intensities at Tube-sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**

## Flow Perturbation

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

## Flow Properties

On the Design of Thin Subsonic Airfoils **AM 6**

## Flow Rates

Distillation Columns—A Class of Dynamic Systems With Multiple Inputs **DS 58**

Experimental Studies of Tube Fittings in Steam Generators and Heat Exchangers **PVT 125**

Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 449**

## Flow Resistance

Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods **F 429; (D) F 434; (AC) F 435**

## Flow Self-Regulation

The Flow Self-Regulating Hydrostatic Screw and Nut **L 364**

## Flow Separation

Prediction of Incompressible Turbulent Separating Flow (D) **F 147; (AC) F 148**

Subsonic Turbulent Flow Past a Planar Fence **F 373**

Turbulent Flow Over a Plane Symmetric Sudden Expansion **F 348**

## Flow Stability

Stability of Flow From a Nuclear Cavity (79-FE-5) **F 335**

## Flow Strength

The Strain-Rate and Temperature Dependence of 18Ni (350) Maraging Steel Tensile Properties **MT 91**

## Flow Stress Models

Flow Stress Model in Metal Cutting (78-WA/Prod-27) **I 403; (D) (AC) I 415**

## Flow Stress Values

The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**

## Flow Unsteadiness

An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall (D) (AC) **F 405**

## Flow Velocity

Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**

Velocity Exponent for Erosion and Noise Due to Cavitation **F 69**

## Flowing Mixtures

Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**

## Flowfield

Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141; (D) BE 149; (AC) BE 150**

## Flowmeter

The Stolz and ASME-AGA Orifice Equations Compared to Laboratory Data (78-WA/FM-2) **F 483**

## Fluctuating Flow

Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel **AM 21**

## Fluctuating Load

Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**

## Fluid Dynamic Excitation

Fluid Dynamic Excitation of Centrifugal Compressor Rotor Vibrations (D) **F 401; (AC) F 402**

## Fluid Dynamics

Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 267**

Finite Element Analysis in Fluid Dynamics (BR) **AM 966**

Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 78**

## Fluid-Filled Torus

Flow in a Toroidal Thermosiphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**

## Fluid-Film Flows

Fluid-Film Flows of Differential Fluids of Complexity  $n$  Dimensional Approach—Applications to Lubrication Theory **L 140**

## Fluid Film Lubrication

A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 407**

## Fluid Flow

Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**

Heat Transfer and Fluid Flow Analysis of Interrupted-Wall Channels, with Application to Heat Exchangers (D) **HT 188; (AC) HT 189**

Twisted-Pore Effect on Fluid Flow, Solid Deformation and Stress in a Poro-Elastic Cylinder **AM 784**

## Fluid Layers

Onset of Convection in Fluid Layers with Non-uniform Volumetric Energy Sources (79-HT-100) **HT 686**

## Fluid Leakage

Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

## Fluid Logic

Introduction to Fluid Logic (BR) **DS 83**

## Fluid Losses

Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**

## Fluid Mechanical Data

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**

## Fluid Mechanics

Fluid Mechanics of Arterial Stenoses **BE 157**

Fluid Mechanics of Longitudinal Contractions in the Small Intestine **BE 284**

## Fluid Medium

Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**

## Fluid Meter Discharge

Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) **P 572**

## Fluid Motions

Buoyancy Induced Fluid Motions Characteristic of Applications in Technology—The 1978 Freeman Scholar Lecture **F 5**

## Fluid Properties

Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**

## Fluid Rheology

The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) **L 266; (D) L 273; (AC) L 274**

## Fluid-Saturated Rocks

Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) **ERT 112**

## Fluid Temperature

Fluid Temperature and Mixed Convection Effects in Hot-Wire Measurements of Natural Convection Flows (BN) **AM 231**

## Fluid Transients

The Effect of Gaseous Cavitation on Fluid Transients **F 79**

## Fluid Transport

Peristaltic Pumping by a Lateral Bending Wave **BE 239**

## Fluid Withdrawal

Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube **HT 23**

## Fluidic Controller

An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**

## Fluidization

Characteristics of Fluidization of a Solid Particle Bed **HT 386**

## Fluidized Bed

Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed **HT 397**

## Fluidized-Bed Coal Combustor

Erosion-Corrosion Effects on Boiler Tube Metals in a

Multisolid Fluidized-Bed Combustor (77-WA/CD-1) **P 1; (D) P 7; (AC) P 8**

## Fluidized Beds

Solids Circulation in Turbulent Fluidized Beds and Heat Transfer to Immersed Tube Banks **HT 381**

## Fluids

Convective Heat Transfer in Porous Media (78-HT-45) **HT 587**

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

Dynamic Response of a Cylindrical Shell in a Potential Fluid (79-WA/APM-22) **AM 772**

Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids **AM 519**

The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) **AM 499**

The Interaction of Solid or Liquid Particles and Turbulent Fluid Flow Fields—A Numerical Simulation **F 265**

The Laminar Far Wake Flow of a Non-Newtonian Power-Law Fluid **F 331**

The Laminar Flat Radial Jet of an Incompressible Power Law Fluid (BN) **AM 210**

Laminar Throughflow of a Fluid Containing Particles Between Rotating Disks (76-WA/FE-41) **F 87**

Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid (TN) **HT 588**

The Propagation of Boiling Boundary Phase-Change Fronts in Moving Fluids (78-WA/FE-18) **F 270**

A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 185**

Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids (BN) **AM 958**

Squeeze Film Damping of Non-Newtonian Fluids **L 518**

Stability of a Rotor Partially Filled With a Viscous Incompressible Fluid (79-WA/APM-28) **AM 913**

A Study of Penetrative Convection in Rotating Fluid **HT 261**

The Temperature Dependence of Surface Tension of Pure Fluids (Er) **HT 578**

Trajectories of Single and Double Jets Injected into a Crossflow of Arbitrary Velocity Distribution **F 217**

Transient Response of Two Fluid-Coupled Cylindrical Elastic Shells to an Incident Pressure Pulse (79-WA/APM-15) **AM 513**

Vortex Motions Induced by V-Grooved Rotating Cylinders and Their Effect on Mixing Performance (79-FE-2) **F 186**

## Fluted Gregging Condensing Surfaces

A Generalized Procedure for the Design and Optimization of Fluted Gregging Condensing Surfaces **HT 335**

## Flux Jump

Longitudinal Heat Propagation in Three-Phase Laminated Composites at Low Exciting Frequencies (79-WA/APM-2) **AM 557**

## Fly Ash

On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) **P 584**

Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 820**

## Flywheels

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

Fogal, G. L. Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**

## Foil Bearing

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 86**

Foral, R. F. Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) **PVT 200**

## Force Analysis

Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**

## Force Components

Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

## Force Defects

An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D) P 245; (AC) P 248**

## Force Systems

Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

Generalized Force Curve Shapes for Structural Synthesis of

- Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**
- Forced Convection**  
Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**  
Heat Transfer by Forced and Free Convection in a Horizontal Channel with Differentially Heated Ends **HT 417**  
Les instabilités hydrodynamiques en convection libre, forcée et mixte (BR) **AM 968**  
Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**
- Forced Convection Flow**  
Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) **HT 381**
- Forced Lateral Response**  
Nonlinear Analysis of Rail Vehicle Forced Lateral Response and Stability **DS 230**
- Forced System**  
Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**
- Forced Vibrations**  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**
- Forcing Function**  
A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**  
A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**
- Forcing Vector**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**
- Forging**  
Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**  
Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**  
Forristall, G. Z. Semisubmersible Rig Motion Studies Offshore of Alaska and Southern California **ERT 182**
- Fossil Fuels**  
Alternative Aircraft Fuels (78-GT-59) **P 155**  
Measurement of Energy Resources **DS 16**
- Fossil Power Plants**  
Design of a Practical Controller for a Commercial Scale Fossil Power Plant **DS 284**
- Foulard, C. (author)** Commande et Régulation par Calculateur Numérique (BR) **DS 179**
- Fouling**  
Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**  
Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) **P 598**  
The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 500**
- Foundation Damping**  
A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**
- Foundation Fillet Radii**  
Local Flexibility Coefficients for the Built-In Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) **PVT 249**
- Four-Bar Linkages**  
A Compendium of Line-Symmetric Four-Bars (78-DET-14) **MD 506**  
The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 89**  
Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**  
Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 386**  
A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 82**
- Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**
- Four-Bar Mechanisms**  
A Reassessment of Grashof's Criterion (TB) **MD 515**  
On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**
- Four-Bar Motion Generator**  
Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (WA/DE-2) **MD 614**
- Foust, D. R.** A Biomechanical Analysis of Head Impact Injuries to Children **BE 250**
- Fractionation**  
The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 500**
- Fractographic Analysis**  
Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**
- Fracture**  
Acoustic Emission From a Brief Crack Propagation Event **AM 107**  
Calculational Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**  
Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**  
Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) **ERT 66**  
Ductile Fracture in Axisymmetric Extrusion and Drawing—Part I: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23**; Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 36**  
The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel **MT 258**  
Effects of Nonlinear Stress-Strain Rate Relation on Deformation and Fracture of Materials in Creep Range **MT 369**  
Fracture Related to a Dislocation Distribution (79-WA/APM-26) **AM 617**  
Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**  
Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (79-WA/PROD-25) **I 237**  
Statistical Methods for Creep, Fatigue and Fracture Data Analysis **MT 344**  
A Stress Gradient Theory of Rock Fracture in Drilling **ERT 46**
- Fracture Behavior**  
The Strain-Rate and Temperature Dependence of 18Ni (350) Maraging Steel Tensile Properties **MT 91**  
Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**
- Fracture Dimensions**  
A Comparison of the Theories for Predicting Width and Extent of Vertically Hydromechanically Induced Fractures **ERT 8**
- Fracture Mechanics**  
Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**  
Can Fracture Mechanics Determine Defect Tolerance? **PVT 97**  
Diffraction of SH-Waves by an Edge Crack **AM 101**  
Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53**; (D)(AC) **MT 58**  
Fracture Mechanics (BR) **AM 967**  
Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**  
Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**
- Fracture Mechanics Solutions**  
Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**
- Fracture-Safe Containment Vessel**  
Metalurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) **PVT 242**
- Fracture Surface Rotation**  
A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 80**
- Fracture Toughness**  
Diametral Compressive Testing Method **MT 139**  
Techniques Developed for Elevated Temperature Fracture Toughness Testing of Irradiated Materials in Thin Sections **MT 403**
- Fractures**  
Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 168**  
Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement **MT 98**
- Fracturing**  
Failure of Inclined Boreholes (78-Pet-44) **ERT 232**  
Fraize, W. E. Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**
- France, D. M.** Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**
- Francis, J. E.** Thermography as a Means of Blood Perfusion Measurement **BE 248**
- Free Circular Plate**  
Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 129**
- Free Convection**  
Finite-Difference Solution of Free Convection Problem with Non-uniform Gravity (TN) **HT 745**  
Free Convection Heat Transfer from Heated Cylinders Immersed in a Shallow Water Layer (TN) **HT 741**  
Heat Transfer by Forced and Free Convection in a Horizontal Channel with Differentially Heated Ends **HT 417**  
Les instabilités hydrodynamiques en convection libre, forcée et mixte (BR) **AM 968**  
Local Nonsimilarity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate **HT 542**  
Over-All Heat Transfer from Vertical Cones in Laminar Free Convection: An Approximate Method (TN) **HT 174**
- Free Convection Currents**  
Effects of Mass Transfer and Free-Convection Currents on the Flow Past an Impulsively Started Vertical Plate **AM 757**
- Free Convective Melting**  
Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water **HT 313**
- Free Energy**  
Free Energy of Granular Materials in Static Equilibrium (BN) **AM 944**
- Free Layers**  
Free Shear Layer Behavior in Rotating Systems **F 117**; (D)(AC) **F 120**
- Free Overfall**  
Inviscid Solution for the Problem of Free Overfall **AM 1**
- Free Stream**  
The Influence of Geometric Asymmetry on the Flow Downstream of Row of Jets Discharging Normally into a Free Stream (TN) **HT 183**
- Free Stream Fluctuation**  
Drag on an Oscillating Airfoil in a Fluctuating Free Stream **F 391**
- Free Surfaces**  
Diffraction of SH-Waves by an Edge Crack **AM 101**  
Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) **ERT 167**
- Free Toroidal Shell Shapes**  
A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**
- Free Vibrations**  
Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**; (D)(AC) **AM 963**
- Freedom Modeling**  
The Investigation of Locomotive Dynamics via A Large Degree of Freedom Modeling **I 397**
- Freeman, R. G.** A Note on Thermal Convection in a Saturated, Heat-Generating Porous Layer (TN) **HT 169**
- Freeman Scholar Lecture**  
Buoyancy Induced Fluid Motions Characteristic of Applications in Technology—The 1978 Freeman Scholar Lecture **F 5**
- Freezing**  
Freezing Controlled by Natural Convection **HT 576**  
Investigation of Freezing of Salt Solutions in Cells **HT 459**  
Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**  
The Stefan Problem of a Polymorphous Material (79-WA/PM-29) **AM 789**  
Transient Freezing of Liquids in Turbulent Flow inside Tubes **HT 465**  
A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection **HT 592**

## Freezing System

The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**

## Freezing Temperature Range

Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**

## Freight Cars

Lateral Stability of Freight Cars With Axes Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 11**

**Frene, J.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190**; (D) **L 198**; (AC) **L 200**

## Frequency Approach

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

## Frequency Effects

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

## Frequency Range

A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**

## Frequency Ratio

The Lancashire Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

## Frequency Response

Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**

Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**

## Frequency-Response Characteristics

A Quantitative Evaluation of the Frequency-Response Characteristics of Active Human Skeletal Muscle In Vivo **BE 28**

## Fretting Wear

Fretting Wear of Heat Exchanger Tubes—Part 1: Experiments (78-JPGC-NE-8) **P 625**; Part II: Models (78-JPGC-NE-9) **P 630**

**Freudenstein, F.** Guest Editorial **MD 1**; Optimum Synthesis of Mechanism Using Heuristics for Decomposition and Search (78-DET-5) **MD 380**; (D) (AC) **MD 385**; Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20**; Performance Criteria for High-Speed Crank-and-Rocker Linkages Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 26**; Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**

**Freund, L. B.** An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**

## Friction

A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) **L 201**; (D) **L 206**; (AC) **L 207**

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**

Friction and Wear of Sintered Cast Iron Products **L 54**

Frictional Resistance of Enclosed Rotating Cones With Superposed Throughflow **F 259**

A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 407**

A Two-Degree-of-Freedom System With Coulomb Bearing Friction (BN) **AM 217**

## Friction Coefficients

An Analytical Study of Starved Porous Bearings **L 38**

## Friction Factor

The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**

Velocity Distributions and Turbulence Intensities at Tubesheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**

## Friction Materials

Wear and Thermal Processes in Asbestos-Reinforced Friction Materials **L 481**

## Frictional Conditions

A Study of Multiple Hole Extrusion **MT 135**

## Frictional Interface

Reflection, Refraction, and Absorption of Elastic Waves at a

Frictional Interface: SH Motion (79-WA/PM-5) **AM 625**

## Frictional Shear

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**

## Frictional Wear

Frictional Wear Mechanisms (GR) **MD 366**

## Frictionless Contact Problems

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) **L 105**

**Friedmann, P.** The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

**Frishmuth, R. E.** Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**

**Froehrb, D. A.** A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**; A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**

**Frost, W.** (editor) Handbook of Turbulence, Volume 1 (BR) **AM 237**

**Fruman, D. H.** Effects of Additive Ejection on Lifting Hydrofoils (77-FE-27) **F 244**

## Fuel/Air Ratio

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

## Fuel Assembly

Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**

## Fuel Changes

Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**

## Fuel Cladding

An Analysis of the Rupture Behavior of Pressurized Fast Reactor Cladding Tubes Subjected to Thermal Transients **MT 293**

## Fuel Consumption

Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 188**

## Fuel Controller

Design of a Practical Controller for a Commercial Scale Fossil Power Plant **DS 284**

## Fuel Costs

The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 162**

## Fuel Efficiency

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64**; (D) **DS 69**; (AC) **DS 70**

## Fuel-Injection System

An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**

## Fuel Oils

Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

## Fuel Utilization

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

## Fuels

Alternative Aircraft Fuels (78-GT-59) **F 155**

Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**

Radiative Transfer in Hartmann MHD Flow (78-HT-18) **HT 502**

The Relative Value of Energy Derived from Municipal Refuse **ERT 251**; (D) **ERT 255-258**; (AC) **ERT 258**

**Fugate, M. A.** A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**

**Fukuoka, H.** Thickness Oscillations in Deformed Elastic Plate **AM 663**

**Fukusako, S.** Back-Melting of a Horizontal Cloudy Ice Layer with Radiative Heating **HT 90**; Characteristics of Fluidization of a Solid Particle Bed **HT 386**; Forced Convection Heat Transfer on Heated Bottom Surface of a Cavity **HT 475**

**Funebashi, H.** Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20**; Performance Criteria for High-Speed Crank-and-Rocker Linkages

Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 26**

## Function Generating Mechanisms

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 398**

## Function Generation Synthesis

Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**

**Fung, Y. C.** Constitutive Equation of Lung Tissue Elasticity **BE 38**; Inversion of a Class of Nonlinear Stress-Strain Relationships of Biological Soft Tissues **BE 23**; New Technical Editor, Journal of Biomechanical Engineering **BE 1**; Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/PM-25) **AM 31**

**Furuya, Y.** Three-Dimensional Structure of a Nominally Planar Turbulent Boundary Layer **F 328**

## Fusion Reactors

Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**

## Fusion Temperature

Freezing Controlled by Natural Convection **HT 578**

**Fussell, J. B.** (author) Collection of Methods for Reliability and Safety Engineering (GR) **MD 175**

## G

**Gaggioli, R. A.** Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) **I 427**

## Gait Analysis Subsystem

A Gait Analysis Subsystem for Smoothing and Differentiation of Human Motion Data **BE 205**

**Gaiante, J. O.** Materials for Human Implantation **BE 2**; Three-Dimensional Coordinate Data Processing in Human Motion Analysis **BE 279**

**Galliety, G. D.** Elastic and Elastic-Plastic Buckling of Internally Pressurized 2:1 Ellipsoidal Shells (Er) **PVT 112**; Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) **PVT 216**; Plastic Collapse and the Controlling Failure Pressures of Thin 2:1 Ellipsoidal Shells Subjected to Internal Pressure **PVT 64**; Plastic Collapse of Thin Internally Pressurized Torispherical Shells **PVT 311**

**Gally, M.** An Investigation of Pressure Transients in Viscoelastic Pipes (79-WA/FE-10) **F 495**

## Game Theory Approach

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 398**

**Ganić, E. N.** On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 288**

**Ganier, M. A.** Design Charts for Disk Cams with Reciprocating Radial Roller Followers (78-DET-35) **MD 465**

**Garcia-Gardes, E.** Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/PROD-16) **I 264**

**Gardner, G. F.** (author) 3000-HP Roller Gear Transmission Development Program. Volume VI. Reliability and Maintainability Report (GR) **MD 174**

**Garg, A.** Human Factors in Machine Design (78-DET-68) **MD 567**

**Garg, V. K.** Comparative Study of the Linear and Non-Linear Locomotive Response **DS 263**

**Garguilo, E. P., Jr.** Porous Wall Gas Lubricated Journal Bearings: Experimental Investigation **L 468**; Theoretical Investigation **L 458**

**Gardling, D. K.** Techniques for Reducing Thermal Conduction and Natural Convection Heat Losses in Annular Receiver Geometries **HT 108**

## Gas Bearings

Experimental Investigation of Slider Gas Bearings With Ultra-Thin Films **L 510**

Performance of Spherical Gas Bearings in Axisymmetric Operation (TB) **L 240**

## Gas Cycle Power Plants

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle



- Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**
- Gas Disposal Problem**  
A Unique Approach to the Offshore Gas Disposal Problem: Castellan SALS Production Facilities **ERT 210**
- Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (78-Lub-30) **L 339**; (D) (AC) **L 348**
- Stability Threshold of Flexibly Supported Hybrid Gas Journal Bearings **L 451**
- Gas Flow**  
An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts (78-WA/PTC-1) **P 855**
- Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 380**
- Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 78**
- Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) **HT 376**
- Gas Generation Design**  
Marine Spey—SMIA Propulsion Module (78-GT-56) **P 149**
- Gas Jets**  
Experimental Study of a Solid-Gas Jet Issuing into a Transverse Stream (D) (AC) **F 147**
- Gas Journal Bearings**  
Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**
- Gas-Liquid Critical Point**  
Viscosity of Nitrogen near the Critical Point (78-WA/HT-38) **HT 3**
- Gas-Liquid Flow**  
Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 61**
- Gas-Liquid Interfaces**  
Pressure Pulse Propagation in Two-Component Slug Flow **F 44**
- Gas-Lubricated Journal Bearings**  
Porous Wall Gas Lubricated Journal Bearings: Theoretical Investigation **L 458**
- Gas-Lubricated Thrust Bearing**  
A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) **L 242**
- Gas Path Sealing**  
Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 548**
- Gas Phase Ignition**  
Critical Regimes of Coal Ignition (78-JPGC/Fu-1) **P 578**
- Gas Pressure Control**  
Plug Flow of Bulk Solids Using Gas Pressure Control **L 85**
- Gas Mixtures**  
Natural Convection in a Ternary Gas Mixture—Application to the Naphthalene Sublimation Technique **HT 404**
- Gas-Particle Mixture**  
Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 705**
- On the Flow Regimes of Downhole Flow of a Gas-Particle Mixture (D) **F 291**; (AC) **F 292**
- Gas Path Seals**  
Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-16) **L 349**; (D) **L 354**; (AC) **L 355**
- Gas Pipelines**  
Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) **ERT 66**
- Gas Radiation**  
Molecular Gas Radiation in the Thermal Entrance Region of a Duct **HT 489**
- Radiative Transfer in Hartmann Minid Flow (78-HT-18) **HT 502**
- Gas Seals**  
A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) **P 647**
- Gas-Solid Channel Flow**  
Numerical Simulation of Particulate Motion in Turbulent Gas-Solid Channel Flow (78-WA/FE-37) **F 319**
- Gas Thrust Bearings**  
Amplitude Effects on the Dynamic Performance of Hydrostatic Gas Thrust Bearings **L 437**
- Gas Turbine Combustion Chamber Flows**  
Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 328**
- Gas Turbine Combustor**  
Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 348**
- Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**
- Gas Turbine Components**  
Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**
- Gas Turbine Engine Disks**  
A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) **P 563**
- Gas Turbine Engines**  
Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**
- Pressure Instrumentation for Gas Turbine Engines—a Review of Measurement Technology (78-GT-148) **P 373**
- Gas Turbine Power Cycles**  
Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**
- Gas Turbine Powered Compressor**  
The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**
- Gas Turbine Regenerators**  
A Study of Chemical Reactivity in Ceramic Heat Exchanger (78-GT-118) **P 270**
- Gas Turbine Stator**  
Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**
- Gas Turbine System**  
USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397**; (D) **P 404**
- Gas Turbines**  
An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**
- Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**
- Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**
- Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**
- Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**
- Gas Turbine Commissioning Procedure (78-GT-54) **P 125**
- Influence on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**
- Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) **P 556**; (D) **P 562**
- The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 162**
- Gaseous Cavitation**  
The Effect of Gaseous Cavitation on Fluid Transients **F 79**
- Gases**  
Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**
- Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**
- A Simple Differential Approximation for Radiative Transfer in Non-Gray Gases (TN) **HT 735**
- Water Production from Exhaust Gases of Steam Power Plants (TB) **P 677**
- Gasifier Nozzles**  
Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**
- Gauge Temperatures**  
Porous Wall Gas Lubricated Journal Bearings: Experimental Investigation **L 466**
- Thin Disk On A Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 346**
- Gaunaud, G.** Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids (BN) **AM 958**
- Gear Design**  
Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**
- Gear Noise**  
Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**
- Gear Power Transmissions**  
Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) **MD 258**
- Gear Pump**  
Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 449**
- Gear Trains**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**
- Multistage Geared Geneva Mechanism (78-DET-18) **MD 41**
- Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) **MD 625**
- Geared Five-Bar Mechanisms**  
Degree of the Input-Output Equations of Certain Geared Five-Bar Mechanisms (78-DET-27) **MD 471**
- Gears**  
A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio **MD 274**
- Gebhart, B.** Buoyancy Induced Fluid Motions Characteristic of Applications in Technology—The 1978 Freeman Scholar Lecture **F 5**
- Geertema, J.** A Comparison of the Theories for Predicting Width and Extent of Vertical Hydraulically Induced Fractures **ERT 8**
- Gellin, S.** Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**
- Generalized Force Curve Shapes**  
Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**
- Generalized Lobster's Arm**  
Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**
- Generator Tubes**  
Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**
- Generators**  
Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**
- Geneva Mechanisms**  
General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**
- A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 83**
- Gentil, S.** (author) Commande et Regulation par Calculateur Numerique (BR) **DS 179**
- Geometric Asymmetry**  
The Influence of Geometric Asymmetry on the Flow Downstream of Row of Jets Discharging Normally into a Free Stream (TN) **HT 163**
- Geometric Constraint**  
Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 449**
- Geometric Modelling**  
Geometric Modelling of the Human Left Ventricle (TB) **BE 221**
- Geometric Nonlinearities**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 50**
- Geometric Parameters**  
A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**
- Geometric Variations**  
A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**
- Geometrical Dimensions**  
Fluid-Film Flows of Differential Fluids of Complexity n Dimensional Approach—Applications to Lubrication Theory **L 146**
- Geotechnical Evaluation**  
National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**
- Geotechnical Field**  
Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) **ERT 128**
- Geothermal Brines**  
Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**
- Geothermal Conditions**  
Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**
- Geothermal Reservoirs**  
Natural Convection in a Multi-Layered Geothermal Reservoir **HT 411**
- Geothermal Resources**  
Utilizing Geothermal Resources Below 150 C (300 F) **ERT 124**
- Gerhart, P. M.** An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts



- (78-WA/PTC-1) **P 555**
- Ghia, K. N.** A Numerical Study of the Laminar Viscous Incompressible Flow Through a Pipe Orifice (D) (AC) **F 290**
- Ghisla, D. N.** Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**
- Gibson, R. D.** A Note on the Phase Relationships Involved in the Whirling Instability in Tube Arrays (D) **F 530**; Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**
- Giddens, D. P.** Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (D) **BE 149**; (AC) **BE 150**
- Gilbert, N.** Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**
- Gill, J. D.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**
- Gilles, G.** (reviewer) Commande et Regulation par Calculateur Numerique (BR) **DS 179**
- Gilmartin, M. J.** Displacement Analysis of Spatial 7R Mechanisms Suitable for Constant-Velocity Transmission Between Parallel Shafts (78-DET-9) **MD 604**
- Ginsberg, J. H.** Resonant Excitation of a Spinning, Nutating Plate **AM 132**
- Gissel, R. L.** An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (D) (AC) **L 337**
- Glaser, D. J.** Development of a Hydraulic Chambered, Actively Controlled Boring Bar **1362**
- Glaucoma**
- Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**
- Global Optimum**
- Global Non-Iterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) **MD 545**
- Glycoprotein**
- A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 185**
- Gnirk, P. F.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**
- Godfrey, R.** Low-Velocity Heat Transfer to a Flat Plate in the Presence of a Corona Discharge in Air (78-WA/HT-47) **HT 157**
- Goel, P. K.** The Statistical Nature of Fatigue Crack Propagation **MT 148**
- Goetz, G. J.** Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) **P 607**
- Gold, B.** Longitudinal Heat Propagation in Three-Phase Laminated Composites at Low Exciting Frequencies (79-WA/APM-2) **AM 557**
- Goldshtein, R. J.** Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**; On the Nature of Jets Entering a Turbulent Flow: Part A—Jet-Mainstream Interaction **P 459**
- Goodall, I. W.** The Development of High Temperature Design Methods Based on Reference Stresses and Bounding Theorems **MT 349**
- Goodman, John**
- Men of Tribology **L 245**
- Goodson, R. E.** Forum **DS 283**
- Goodspeed, C. H.** Comparative Study of the Linear and Non-Linear Locomotive Response **DS 263**
- Goplen, S. P.** Heat Transfer in the Meniscus Thin-Film Transition Region **HT 543**
- Gordon, G.** Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**
- Gordon, J. L.** Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) **PVT 210**; Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Raddi (79-PVP-4) **PVT 249**; On the Nature of Jets Entering a Turbulent Flow: Part B—Film Cooling Performance **P 466**
- Goris, R. S. R.** Heat Transfer Characteristics of a Porous Thrust Bearing (TB) **L 531**
- Gould, G. C.** The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**
- Government Reports**
- AMSAA 2nd Reliability Growth Symposium 12-13 November 1974 **MD 175**
- AMSEC Users Guide **MD 174**
- An Analysis of Effects of Electromechanical Vibration on Selected Specimens **MD 175**
- Bibliography on Reliability, Addendum I **MD 174**
- Calculation Method for Residual Stress Analysis of Filament-Wound Spherical Pressure Vessels **MD 174**
- Collection of Methods for Reliability and Safety Engineering **MD 175**
- Compendium of RAM Computer Routines **MD 175**
- A Computer Program for Calculation of the Residual Stress Distribution and the Effective Stress-Strain Curve of Cold-Formed Structural Members **MD 174**
- Economic and Management Aspects of Nondestructive Testing, Evaluation and Inspection in Aerospace Manufacturing **MD 174**
- Engineering Design Handbook, Maintainability Engineering Theory and Practice (GR) **MD 175**
- Mechanical Components Failure Prognosis Study **MD 175**
- Mechanical Failure—Definition of the Problem **MD 175**
- Metallurgical Materials—a Theory for Permanent Memory Effects **MD 175**
- Mode of Failure Investigation of Helicopter Transmissions **MD 176**
- Noise - Related Publications **MD 3**
- Power Plant Reliability **MD 174**
- Reliability Evaluation Program Manual **MD 175**
- Reliability, Maintainability, and Performance Issues in Hydraulic System Design (GR) **MD 174**
- A Review of Rail-Wheel Contact Stress Problem **MD 175**
- 3000-HP Roller Gear Transmission Development Program, Volume VI, Reliability and Maintainability Report **MD 174**
- Update to Reliability and Maintainability Planning Guide for Army Aviation Systems and Components **MD 175**
- Gradient Furnace Operation**
- A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 270**
- Gradient Stabilization**
- Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**
- Grain Size Variation**
- 50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 86**
- Grant, B.** A Survey of Cam Manufacture Methods (78-DET-65) **MD 455**
- Grant, I. D. R.** Two-Phase Flow on the Shell-Side of a Segmentally Baffled Shell-and-Tube Heat Exchanger (77-WA/HT-22) **HT 38**
- Granular Materials**
- Continuum Mechanical and Statistical Approaches in the Mechanics of Granular Materials (BR) **AM 967**
- Free Energy of Granular Materials in Static Equilibrium (BN) **AM 944**
- Gravity Flow of Granular Materials in Conical Hoppers (79-WA/APM-20) **AM 529**
- Granular Solids**
- Convective Heat Transfer in Porous Media (78-HT-45) **HT 507**
- Graphical Solutions**
- Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **DS 37**
- Graphite**
- Seizure Resistance of Cast Aluminum Alloys Containing Dispersed Graphite Particles of Different Sizes **DS 265**
- Graphite Content**
- Friction and Wear of Sintered Cast Iron Products **L 54**
- Grashof's Criterion**
- A Reassessment of Grashof's Criterion (TB) **MD 515**
- Gravitational Field**
- Inviscid Solution for the Problem of Free Overfall **AM 1**
- Gravity Effect**
- Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**
- Gravity Fractionation**
- The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 500**
- Gravity Materials**
- Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-solids Fluidized-Bed Coal Combustor (77-WA/CD-1) **P 1**; (D) **P 7**; (AC) **P 8**
- Gravity Vector**
- Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity **HT 227**
- Gray, D. D.** The Laminar Flat Radial Jet of an Incompressible Power Law Fluid (BN) **AM 210**
- Gray, K. E.** Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) **ERT 112**
- Gray, R. A., Jr.** Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) **PVT 298**
- Gray, W. H.** A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**
- Grayson, J.** Blood Perfusion Measurements by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 58**
- Grease Lubrication**
- Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 128**
- Greene, E. R.** Ultrasonic Assessment of Simulated Atherosclerosis: In-Vitro and In-Vivo Comparisons **BE 73**
- Green's Functions**
- Green's Functions for Two-Phase Transversely Isotropic Materials **AM 531**
- Gregory, R. S.** Factors Influencing Power Loss of Tilt-Pad Thrust Bearings (78-Lub-22) **L 154**; (D) **L 161**; (AC) **L 162**
- Greif, R.** The Transient and Stability Behavior of a Natural Convection Loop **HT 884**
- Greller, E. M.** A Fundamental Criterion for the Application of Rotor Casing Treatment **F 237**; A Rotating Stall Control System for Turbojet Engines (D) **P 313**; (AC) **P 314**
- Grewal, N. S.** Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed **HT 397**
- Grewal, S. S.** An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**
- Griffin, M. D.** Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**
- Griffin, O. M.** (editor) Ocean Thermal Energy Conversion (BR) **ERT 206**
- Griffiths, S. K.** Low Peclet Number Heat and Mass Transfer from a Drop in an Electric Field **HT 484**
- Grinding**
- Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/PROD-26) **I 285**
- Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) **I 135**; Part II: The Force Equilibrium **I 141**
- Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**
- Grinding Machines**
- A Survey of Cam Manufacture Methods (78-DET-65) **MD 455**
- Grinding Process**
- A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**
- An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**
- Grinding Wheel Topography**
- Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 185**
- Grobman, J.** Alternative Aircraft Fuels (78-GT-59) **P 155**
- Grochowaty, L. D.** Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**
- Groff, E. G.** Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**
- Grondahl, C.** Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**
- Grood, E. S.** Contractile Filament Stress in the Left Ventricle and its Relationship to Wall Stress **BE 225**
- Groove Zones**
- On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**
- Grooved Bearing Misalignment**
- Analysis of Misaligned Grooved Journal Bearings **L 503**

## Grooved Bearings

Exact Two-Dimensional Analysis of Circular Disk Spiral Groove Bearing (Part I) **L 424**; (Part II) **L 432**

Gross, G. P. The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) **P 524**

## Gross Morphology

Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 46**; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53**

Grossman, G. Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 118**

Grouchko, D. (author) Mathematical Models for the Study of the Reliability of Systems (BR) **Ap 172**

## Ground Surface Temperature

The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-86) **ERT 240**

## Ground Vehicles

A Dynamics Simulation for a High Speed Magnetically Levitated Guided Ground Vehicle **DS 223**

## Group Technology

Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**

## Growth Monitoring

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

## Growth Rate

The Statistical Nature of Fatigue Crack Propagation **MT 148**

## Growth Rates

Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

Guenther, D. A. Power Extraction From Ocean Surfaces Waves **ERT 141**

## Guidance

Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Lift and Guidance **DS 217**

## Guide Fences

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

## Guide Surfaces

Lateral Motion of an Axially Moving String on a Cylindrical Guide Surface **AM 905**

## Guided Missile Frigate

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397**; (D) **P 404**

## Guideway Dynamic Response

A Dynamics Simulation for a High Speed Magnetically Levitated Guided Ground Vehicle **DS 223**

Gumkowski, S. Experimental Study of Evaporation and Breakdown of Thin Liquid Films Driven by Shear Stresses (77-WA/HT-7) **HT 712**

Gunewardana, D. R. Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) **DS 182**

Güney, M. An Investigation of Pressure Transients in Viscous Pipes (79-WA/FE-10) **F 495**

Gupta, B. D. Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) **MD 633**

Gupta, G. D. Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) **PVT 235**; Structural Design of a Superheater for a Central Solar Receiver (78-Lub-32) **L 312**; Part IV: Ball Bearing Results (78-Lub-33) **L 319**

Gupta, K. C. Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**; Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**

Gupta, P. (recipient) 1978 Newkirk Award **L 160**

Gupta, P. K. Dynamics of Rolling-Element Bearings—Part I: Cylindrical Roller Bearing Analysis (78-Lub-25) **L 293**; (D) (AC) **L 303**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) **L 305**; (D) (AC) **L 311**; Part III: Ball Bearing Analysis (78-Lub-32) **L 312**; Part IV: Ball Bearing Results (78-Lub-33) **L 319**

Gupta, R. B. Propagation of Elastic Waves in Rods With Variable Cross Section (BN) **AM 951**

Gupta, R. S. Centrifugal Effects in Hydrostatic Porous Thrust Bearing (TB) **L 381**

## H

Haafkens, R. A Comparison of the Theories for Predicting Width and Extent of Vertical Hydraulically Induced Fractures **ERT 8**

Haba, T. Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**

Habeck, R. The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**

Habib, M. A. Velocity Characteristics of a Confined Coaxial Jet (79-WA/FE-9) **F 521**

Haddad, D. E. A Fundamental Criterion for the Application of Rotor Casing Treatment **F 237**

Haddow, J. B. Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**; Waves From Suddenly Punched Hole in Plate Subjected to Uniaxial Tension Field (79-WA/APM-32) **AM 873**

Hagedorn, P. (author) Nichtlineare Schwingungen (BR) **AM 238**

Hahn, E. J. Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**

Hahn, G. J. Statistical Methods for Creep, Fatigue and Fracture Data Analysis **MT 344**

Haines, R. S. Upper Bounds for Amplitudes of Harmonic Components of Excitation (BN) **AM 716**

Hale, D. A. Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) **MT 191**

## Half Plane

A Rigid Punch Bonded to a Half Plane (79-WA/APM-38) **AM 844**

## Half Space

Effects of Strain Hardening on Rock/Bit-Tooth Interaction (77-Pet-70) **ERT 53**

Hall, W. E., Jr., Optimal Control of Turbine Engines **DS 117**

## Hall Effects

Hydromagnetic Flow Over a Conducting Thick Porous Plate With Hall Effects (9N) **AM 220**

Ham, I. Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 123**

Hamano, M. Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**

Hamelink, J. M. Ocular Tomometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**

## Hamiltonian Systems

On a Class of Modes Defined by Rosenberg (BN) **AM 703**

Hammond, J. L. (author) Reliability and Performance Issues in Hydraulic System Design (GR) **MD 174**

Hampton, S. J. Three-Dimensional Coordinate Data Processing in Human Motion Analysis **BE 279**

Hamrock, B. J. Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231**; (D) **L 238**; (AC) **L 239**; Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) **L 92**

Han, T. Inviscid Solution for the Problem of Free Overfall **AM 1**

Haney, R. S. Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**; Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-Bar (78-DET-39) **MD 238**

Hanna, S. Y. Improved Lower Bounds for Buckling Loads and Fundamental Frequencies of Beams (BN) **AM 896**

Hannemann, R. J. Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

Hannoyer, M. J. Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**

Hansen, F. D. National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**

Hansen, N. E. Modelling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/PROD-6) **L 304**

## Hard Surfaces

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**

## Hardening

The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**

## Hardening Behavior

A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**

## Hardness Indenter

Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**

## Hardware Availability

A Survey of Cam Manufacture Methods (78-DET-65) **MD 455**

## Hardware Configuration

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

## Harmonic Analysis

Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) **DS 31**

## Harmonic Components

Upper Bounds for Amplitudes of Harmonic Components of Excitation (BN) **AM 716**

## Harmonic Holes

Harmonic Holes for Nonconstant Fields (79-APM-30) **AM 573**

## Harmonic Input

Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**

## Harmonic Solids

Plane-Strain Buckling of a Crack in a Harmonic Solid Subjected to Crack-Parallel Compression (79-WA/APM-4) **AM 597**

## Harmonic Wave Propagation

Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**

## Harpole, G. M.

Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**

## Harris, J. G.

Acoustic Emission From a Brief Crack Propagation Event **AM 107**

## Harris, L.

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**

## Harrison, R. A.

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

## Harrison, S. F.

National Board and ASME History on Safety Valves and Safety Relief Valves **PVT 94**

## Hartmann MHD Flow

Radiative Transfer in Hartmann MHD Flow (78-HT-18) **HT 502**

## Hartnett, M. J.

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) **L 105**

## Hartung, H. F.

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

## Harvested Vegetation

Aquatic Plant Harvesting—Development of High-Speed Harvesters and Processing and Utilization of Harvested Vegetation (GR) **MD 366**

## Hase, M. M.

Local Nonsimilarity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate **HT 642**; On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**

## Hase, M. Z.

Correlation of Burnout Data for Disk Heaters Cooled by Liquid Jets (TN) **HT 383**

## Hashish, M.

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/PROD-11) **I 311**

## Hashin, Z.

Analysis of Properties of Fiber Composites With Anisotropic Constituents (79-WA/APM-6) **AM 543**

## Hasse, R. F.

The Relative Value of Energy Derived From Municipal Refuse (D) **ERT 258**; (AC) **ERT 259**

## Hasid, S.

A Reynolds Stress Model for Flows With Drag Reduction **F 159**

## Haszpra, O. (author)

Modeling Hydroelastic Vibrations (BR) **AM 237**

## Hatt, S. K.

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 386**

## Hallon, A. P.

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow Through Radial Turbomachines with Log-Spiral Blade Surfaces

- (78-GT-195) **P 450**  
**Haug, E. J., Jr.** A State Space Method for Optimal Design of Vibration Isolators **MD 309**
- Hawthorne, J. R.** Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) (A) **PVT 298**
- Hayami, H.** Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D) P 39; (AC) P 40**
- Hayashi, Y.** Investigation of Freezing of Salt Solutions in Cells **HT 459**
- Haythornthwaite, R. M.** An Interpolation Scheme for Plastic Yield Criteria (BN) **AM 701**
- Head Impact Injuries**  
 A Biomechanical Analysis of Head Impact Injuries to Children **BE 250**
- Heart Muscle**  
 Contractile Filament Stress in the Left Ventricle and its Relationship to Wall Stress **BE 225**
- Heart Valves**  
 Numerical Study of the Steady Axisymmetric Flow Through a Disk-Type Prosthetic Heart Valve in an Aortic-Shaped Chamber **BE 199**
- Heat**  
 Heat Setting Procedures for Helical Coiled Springs (GR) **MD 366**  
 Utilizing Geothermal Resources Below 150 C (300 F) **ERT 124**
- Heat Balance**  
 The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-86) **ERT 240**
- Heat Conduction**  
 Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 20**  
 Homogenization for Transient Heat Conduction (BN) **AM 945**  
 Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**  
 Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) **AM 505**  
 A Thermohydrodynamic Analysis of Journal Bearings **L 21**  
 Three-Dimensional, Steady-State Heat Conduction in Cylinders of General Anisotropic-Media **HT 548**
- Heat Dispersal Systems**  
 Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) **DS 162**
- Heat Energy**  
 The Relative Value of Energy Derived from Municipal Refuse **ERT 251; (D) ERT 255-258; (AC) ERT 258**
- Heat Exchanger Tubes**  
 Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-solids Fluidized-Bed Coal Combustor (77-WA/CD-1) **P 1; (D) P 7; (AC) P 8**  
 Fretting Wear of Heat Exchanger Tubes—Part I: Experiments (78-JPGC-NE-8) **P 625; Part II: Models (78-JPGC-NE-9) P 630**
- Heat Exchangers**  
 Calculation of Mean Temperature Difference in Air-Cooled Cross-Flow Heat Exchangers **HT 511**  
 A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) **MD 349**  
 Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**  
 Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**  
 Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 300**  
 A Generalized Procedure for the Design and Optimization of Fluted Gregoir Condensing Surfaces **HT 335**  
 Heat Transfer and Fluid Flow Analysis of Interrupted-Wall Channels, with Application to Heat Exchangers (D) **HT 188; (AC) HT 189**  
 Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**  
 On Thermal Expansion Induced Stresses in U-Bends of Shell-and-Tube Heat Exchangers (78-JPGC-NE-14) **P 634**  
 Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9; Part II: Applications (77-WA/NE-7) P 16**  
 A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 270**  
 Two-Phase Flow on the Shell-Side of a Segmentally Baffled Shell-and-Tube Heat Exchanger (77-WA/HT-22) **HT 38**
- Heat Flow**  
 Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**
- Heat Flux**  
 An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**  
 Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 278**  
 Correlation of Burnout Data for Disk Heaters Cooled by Liquid Jets (TN) **HT 383**  
 Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 705**  
 Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction **HT 217**  
 Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) **HT 376**  
 The Thermal-Hydraulic Phenomena Resulting in Early Critical Heat Flux and Rewet in the Semicore Core **HT 43**  
 Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**  
 Thin Disk On A Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 346**  
 Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**  
 Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**
- Heat Generation**  
 Heat Transfer in Composite Solids with Heat Generation **HT 137**  
 A Note on Thermal Convection in a Saturated, Heat-Generating Porous Layer (TN) **HT 169**
- Heat Generation Process**  
 An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**
- Heat Losses**  
 Techniques for Reducing Thermal Conduction and Natural Convection Heat Losses in Annular Receiver Geometries **HT 106**
- Heat Pipes**  
 Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **ERT 225**
- Heat Propagation**  
 Longitudinal Heat Propagation in Three-Phase Laminated Composites at Low Exciting Frequencies (79-WA/APM-2) **AM 557**
- Heat Pumps**  
 The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 162**
- Heat Rates**  
 Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**
- Heat Recovery**  
 Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**
- Heat Recovery Systems**  
 The Economics of Energy Recovery From Industrial Waste Incineration **ERT 260; (D) ERT 268; (AC) ERT 269**
- Heat Source Model**  
 Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**
- Heat Sources**  
 Transient Temperature Distributions in an Infinite, Perfused Medium due to a Time-Dependent, Spherical Heat Source **BE 82**
- Heat Transfer**  
 Analysis of Turbulent Flow and Heat Transfer in Internally Finned Tubes and Annuli **HT 29**  
 Calculation of Mean Temperature Difference in Air-Cooled Cross-Flow Heat Exchangers **HT 511**  
 Calculation of Variable Property Turbulent Friction and Heat Transfer in Rough Pipes **HT 469**  
 The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**  
 Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**  
 Condensation on an Extended Surface **HT 434**  
 Convective Heat Transfer Augmentation in Thermal Entrance Regions by Means of Thermal Instability **HT 222**  
 Convective Heat Transfer in Porous Media (78-HT-45) **HT 507**  
 Convective Heat Transfer of Laminar Droplet Flow in Thermal Entrance Region of Circular Tubes **HT 480**  
 The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**  
 Dropwise Evaporation **HT 441**  
 Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**  
 Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed **HT 397**  
 Eigensolutions for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**  
 Entrainment by a Jet at a Density Interface in a Thermally Stratified Vessel (77-HT-23) **HT 538**  
 Evaporative Heat Transfer and Pressure Drop Performance of Internally-Finned Tubes with Refrigerant 22 **HT 447**  
 Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**  
 Fin Thickness for an Optimized Natural Convection Array of Rectangular Fins (TN) **HT 564**  
 Flow through Successive Enlargement, Turning, and Contraction—Pressure and Fluid Flow Characteristics (TN) **HT 554**  
 Forced Convection Heat Transfer on Heated Bottom Surface of a Cavity **HT 475**  
 Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**  
 Free Convection Heat Transfer from Heated Cylinders Immersed in a Shallow Water Layer (TN) **HT 741**  
 Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**  
 Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**  
 Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**  
 Heat Transfer Characteristics for In-line and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 526**  
 Heat Transfer Characteristics of a Porous Thrust Bearing (TB) **L 531**  
 Heat Transfer in Composite Solids with Heat Generation **HT 137**  
 Heat Transfer Correlation for Subcooled Water Films on Horizontal Tubes (TN) **HT 176**  
 Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube **HT 23**  
 Heat Transfer and Fluid Flow Analysis of Interrupted-Wall Channels, with Application to Heat Exchangers (D) **HT 188; (AC) HT 189**  
 Heat Transfer by Forced and Free Convection in a Horizontal Channel with Differentially Heated Ends **HT 417**  
 Heat Transfer in the Meniscus Thin-Film Transition Region **HT 543**  
 Investigation of Freezing of Salt Solutions in Cells **HT 459**  
 An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**  
 Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers **HT 151**  
 Laminar Free Convection in Small Aspect Ratio Rectangular Enclosures with Isothermal Boundary Conditions (TN) **HT 569**  
 Latent Heat-of-Fusion Energy Storage: Experiments on Heat Transfer from Cylinders During Melting (78-HT-47) **HT 453**  
 Local and Average Heat Transfer Characteristics for Turbulent Airflow in an Asymmetrically Heated Tube **HT 635**  
 Local Nonsimilarity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate **HT 642**  
 Low Peclet Number Heat and Mass Transfer from a Drop in an Electric Field **HT 484**  
 Low-Velocity Heat Transfer to a Flat Plate in the Presence of a Corona Discharge in Air (76-WA/HT-47) **HT 157**  
 The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 648**  
 Mechanism of Heat and Momentum Transfer of Combined Free and Forced Convection with Opposing Flow (TN) **HT 573**  
 On the Mechanism of Liquid Drop Deposition in Two-Phase



- Dispensed Flow **HT 288**  
Method for Visualizing High Prandtl Number Heat Convection (TN) **HT 571**  
Molecular Gas Radiation in the Thermal Entrance Region of a Duct **HT 489**  
Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**  
Natural Convection Heat Transfer in Moderate Aspect Ratio Enclosures **HT 655**  
Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity **HT 227**  
Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**  
Over-All Heat Transfer from Vertical Cones in Laminar Free Convection: an Approximate Method (TN) **HT 174**  
On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets (78-HT-21) **HT 532**  
Radiative Transfer in Hartmann MHD Flow (78-HT-18) **HT 502**  
Response of Building Components to Heating in a Fire **HT 365**  
Shielding of Heat Transfer from a Boundary (TN) **HT 560**  
A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**  
Small Reynolds Number Convection in Rotating Spherical Annuli **HT 427**  
Solids Circulation in Turbulent Fluidized Beds and Heat Transfer to Immersed Tube Banks **HT 391**  
The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**  
Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**  
A Study of Entropy Generation in Fundamental Convective Heat Transfer **HT 718**  
Surface Radiative Exchange in Rod Bundles (TN) **HT 376**  
Three-Dimensional, Steady-State Heat Conduction in Cylinders of General Anisotropic Media **HT 548**  
A Three-Flux Method for Predicting Radiative Transfer in Aqueous Suspensions **HT 496**  
Transient Freezing of Liquids in Turbulent Flow inside Tubes **HT 485**  
Triangular Fin Performance by the Heat Balance Integral Method (TN) **HT 562**  
Turbulent Boundary Layer Heat Transfer on Curved Surfaces **HT 521**  
Unsteady Mixed Convection Heat Transfer from a Horizontal Circular Cylinder **HT 126**  
Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**
- Heat Transfer Coefficients**  
Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface **HT 211**
- Heat Transfer Rates**  
Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**  
Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**  
Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**
- Heat Treatment**  
50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 86**  
Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**  
Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**  
Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement **MT 98**  
Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**
- Heated Cylinders**  
Melting about a Horizontal Row of Heating Cylinders (TN) **HT 732**
- Heated Ends**  
Heat Transfer by Forced and Free Convection in a Horizontal Channel with Differentially Heated Ends **HT 417**
- Heated Sections**  
Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**
- Heated Surfaces**  
Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 660**
- Heated Thermocouple Probe**  
Blood Perfusion Measurements by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 58**
- Heated Turbulent Jets**  
Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**
- Heated Water**  
Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**
- Heath, B. B.** Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) **P 556; (D) P 562**
- Hacklinger, R. S.** The Relative Value of Energy Derived from Municipal Refuse **ERT 251; (D) ERT 255-258; (AC) ERT 258**
- Heckmann, S. R.** Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 419; (D) L 423**
- Hedrick, J. K.** Nonlinear Analysis of Rail Vehicle Forced Lateral Response and Stability **DS 230**
- Heiser, J. N.** Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**
- Heimbold, R. L.** Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**
- Heiser, K. W.** Performance Characteristics of a Simple Linearized Hot-Wire Anemometer **F 381**
- Helical Coiled Springs**  
Heat Setting Procedures for Helical Coiled Springs (GR) **MD 366**
- Helicopter Transmissions**  
A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164; (D) (AC) L 170**  
Mode of Failure Investigations of Helicopter Transmissions (GR) **MD 176**
- Helium**  
An Experimental Study of Thermally-Induced Flow Oscillations in Supercritical Helium **HT 9**  
Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**
- Helium Turbine Plants**  
An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**
- Helmholtz Oscillator**  
Experimental Study of a Jet-Driven Helmholtz Oscillator (78-WA/FE-16) **F 363**
- Hemami, H.** Indirect Control of the Forces of Constraint in Dynamic Systems **DS 355**
- Hemodynamics**  
Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**  
Ultrasonic Assessment of Simulated Atherosclerosis: In-Vitro and In-Vivo Comparisons **BE 73**
- Hemolysis**  
Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures **BE 213**
- Henderson, W. E.** Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**
- Henderson, J.** An Investigation of Multi-Axial Creep Characteristics of Metals **L 356**
- Henderson, J. B.** Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differentials Power Plant **ERT 93**
- Herrmann, G.** On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) **P 584; Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Box - Plane Strain, Analytical Results AM 113**
- Heteroclinic Orbits**  
Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) **AM 672**
- Heterogeneous Ignition**  
Critical Regimes of Coal Ignition (78-JPGC/Fu-1) **P 578**
- Heuristic Procedures**  
Optimal Programming of Working Cycles for Industrial Robots **MD 250**
- Heuristic Techniques**  
Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380; (D) (AC) MD 385**
- Heyman, S. J.** A Quantitative Evaluation of the Frequency-Response Characteristics of Active Human Skeletal Muscle In Vivo **BE 28**
- Hickox, C. E.** Techniques for Reducing Thermal Conduction and Natural Convection Heat Losses in Annular Receiver Geometries **HT 108**
- High Frequency Oscillations**  
An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145; (D) L 152; (AC) L 153**
- High-Pressure Vessels**  
Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 165**
- High-Speed Elastic Linkages**  
A Closed Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**  
A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**
- High-Speed Linkages**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) MD 26**
- High Stiffness Bearings**  
High Stiffness Bearing **L 520**
- High-Temperature Crack Propagation**  
Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154; Part II—Fatigue Crack Propagation MT 182**
- Hight, T. K.** A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) **BE 176**
- Hilberry, B. M.** Determining the In-Vivo Areas of Contact in the Canine Shoulder **BE 271; The Statistical Nature of Fatigue Crack Propagation MT 149**
- Hirano, Y.** Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**
- Hirao, M.** Thickness Oscillations in Deformed Elastic Plate **AM 563**
- Hirsch, C.** An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D) P 245; (AC) P 248**
- Hirsch, Ch.** An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**
- Hishida, M.** Structure of Turbulent Velocity and Temperature Fluctuations in Fully Developed Pipe Flow **MT 15**
- Histand, M. B.** Ultrasonic Assessment of Simulated Atherosclerosis: In-Vitro and In-Vivo Comparisons **BE 73**
- Hilomi, K.** Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128; Reliability Analysis of Cutting Tools (78-WA/PROD-9) I 185; Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/PROD-8) I 250**
- Ho, K. T. A.** Optimal Control Concepts for the Characterization and Design of Highway Vehicle - Trailer Systems (78-WA/DSC-27) **DS 127**
- Hochreiter, L. E.** A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**
- Hodge, P. G., Jr.** A Finite-Element Model for Plane-Strain Plasticity (78-WA/AFM-19) **AM 536**
- Hodograph Transformations**  
Inviscid Solution for the Problem of Free Overfall **AM 1**
- Hofmann, R. E.** The Economics of Energy Recovery From Industrial Waste Incineration (D) **ERT 268; (AC) ERT 269**
- Holmstrom, G.** Inverse Design of Optimal Diffusers With Experimental Corroboration (79-WA/FE-15) **F 478; Linearized k-ε Analysis of Free Turbulent Mixing in Streamwise Pressure Gradients With Experimental Verification AM 493**
- Holbrook, G. J.** Periodically Unsteady Flow in an Imbed-



- ded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**
- Hold-Time**  
Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) **MT 224**
- Hole Configuration**  
A Study of Multiple Hole Extrusion **MT 135**
- Hole Direction**  
Failure of Inclined Boreholes (78-Pet-44) **ERT 232**
- Hole Shapes**  
Optimum Hole Shapes in Finite Plates Under Uniaxial Load (DDM) **AM 691**
- Holes**  
Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**  
Film Cooling Effectiveness for Injection from Multirrow Holes (78-GT-32) **P 101**  
Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**
- Hollenberg, J. W.** An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **I 147**
- Hollow Cone Sprays**  
Predictions of Induced Air Flows in Hollow Cone Sprays **F 312**
- Holm, F. W.** Heat Transfer in the Meniscus Thin-Film Transition Region **HT 543**
- Holmberg, R. B.** Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**
- Holmes, P. J.** Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) **AM 672**
- Holmes, R.** Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (D) (AC) **L 138**
- Holonomic Constraints**  
Indirect Control of the Forces of Constraint in Dynamic Systems **DS 355**
- Holtz, M.** On Thermal Expansion Induced Stresses in U-Bends of Shell-and-Tube Heat Exchangers (78-JPGC-NE-14) **P 334**
- Holve, D. J.** Response of Building Components to Heating in a Fire **HT 385**
- Holzappel, I.** Design and Development of Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**
- Holzer, A. J.** Mechanical Behavior of Metals in Dynamic Compression **MT 238**; A Tabular Summary of Some Experiment in Dynamic Plasticity **MT 231**
- Home Electric Energy Power**  
An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (76-WA/Enr-1) **P 213**
- Homogeneous Dispersive Media**  
Elastic Dispersion, Homogeneous Dispersive Media and an Application to Periodic Elastic Media (D) (AC) **AM 236**
- Homogeneous Nucleation**  
Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures **HT 617**
- Homogenization**  
Homogenization for Transient Heat Conduction (BN) **AM 945**
- Hoop Stresses**  
Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) **PVT 188**
- Hoonenborg, B. C.** A Unique Approach to the Offshore Gas Disposal Problem: Castellan SALS Production Facilities **ERT 210**
- Hopkinson Pressure Bars**  
A Tabular Summary of Some Experiments in Dynamic Plasticity **MT 231**
- Hoppers**  
Gravity Flow of Granular Materials in Conical Hoppers (79-WA/AFM-20) **AM 529**
- Horazak, D. A.** Capital Cost System Optimization of OTEC Power Modules **ERT 74**
- Horizontal Cylindrical Annulus**  
Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) **HT 171**
- Horizontal Pipes**  
Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 78**
- Horizontal Plate Filter**  
The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**
- Horizontal Plates**  
Convective Heat Transfer Augmentation in Thermal Entrance Regions by Means of Thermal Instability **HT 222**
- Horizontal Porous Layer**  
Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**
- Horizontal Substrate**  
Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**
- Horizontal Tubes**  
Heat Transfer Correlation for Subcooled Water Films on Horizontal Tubes (TN) **HT 178**  
A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (Er) **HT 375**
- Horne, R. N.** Natural Convection in a Multi-Layered Geothermal Reservoir **HT 411**
- Horne, H. E. (author)** An Analysis of Effects of Electromechanical Vibration on Selected Specimens (GR) **MD 175**
- Horvay, G.** Longitudinal Heat Propagation in Three-Phase Laminated Composites at Low Exciting Frequencies (79-WA/AFM-2) **AM 557**
- Hosey, R. J.** Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64**; (D) **DS 69**; (AC) **DS 70**
- Hosey, R. R.** Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**
- Hoshi, T.** Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**
- Hoskins, E. R.** Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice **ERT 196**
- Hot Corrosion**  
Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**
- Hot-Film Velocity Sensors**  
The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**
- Hot-Wire Anemometers**  
Performance Characteristics of a Simple Linearized Hot-Wire Anemometer **F 381**
- Hot-Wire Measurements**  
Fluid Temperature and Mixed Convection Effects in Hot-Wire Measurements of Natural Convection Flows (BN) **AM 231**
- Hotwell Operations**  
Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**
- Hout, W. G.** A Three-Flux Method for Predicting Radiative Transfer in Aqueous Suspensions **HT 406**
- Hourglass Worm Gearing**  
A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio **MD 274**
- Housing Profiles**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**
- Howard, P. A.** Entrainment by a Jet at a Density Interface in a Thermally Stratified Vessel (77-HT-23) **HT 538**
- Hoyt, J. W.** Effects of Additive Ejection on Lifting Hydrofoils (D) (AC) **F 404**; Effect of Nozzle Shape and Polymer Additives on Water Jet Appearance (77-FE-16) **F 304**
- Hsieh, L. M.** Multistage Geared Geneva Mechanism (78-DET-18) **MD 41**
- Hsiao, M. H.** A State Space Method for Optimal Design of Vibration Isolators **MD 309**
- Hsieh, W. T. M.** Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 98**
- Hsu, C. T.** Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 668**
- Hsu, K. S.** Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**
- Hsu, T. C.** Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/PROD-42) **I 341**
- Huang, F. H.** Techniques Developed for Elevated Temperature Fracture Toughness Testing of Irradiated Materials in Thin Sections **MT 403**
- Huang, H.** Transient Response of Two Fluid-Coupled Cylindrical Elastic Shells to an Incident Pressure Pulse (79-WA/AFM-15) **AM 513**
- Huang, N. C.** Finite Biaxial Extension of Completely Set Plain Woven Fabrics **AM 651**
- Huang, P. N. S.** Perturbation Solutions to Phase Change Problem Subject to Convection and Radiation (77-WA/HT-16) **HT 96**
- Huang, T.** Marine Riser Vibration Response Determined by Modal Analysis **ERT 159**
- Hubbard M.** Lateral Dynamics and Stability of the Skateboard **AM 631**
- Hubbert, M. K.** Measurement of Energy Resources **DS 16**
- Hughes, R. O.** Optimal Control of Sun Tracking Solar Concentrators **DS 157**
- Hughes, T. J. R. (reviewer)** Numerical Methods in Laminar and Turbulent Flows (BR) **AM 967**
- Hull Design**  
Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**
- Human Arterial Blockages**  
Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**
- Human Arterial Pulsatile Flow**  
Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**
- Human Blood**  
The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**
- Human Circulatory System**  
Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**
- Human Factors**  
Human Factors in Machine Design (78-DET-66) **MD 587**
- Human Femoral Bone**  
On the Strength Anisotropy of Bone and Wood (79-WA/AFM-21) **AM 832**
- Human Femurs**  
Determination of Elastic Constants for Human Femurs **BE 193**
- Human Gait Analysis**  
A Gait Analysis Subsystem for Smoothing and Differentiation of Human Motion Data **BE 205**
- Human Heart**  
A Simulation of the Dynamics of Counterpulsation **BE 105**
- Human Implantation**  
Materials for Human Implantation **BE 2**
- Human Knee**  
Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**
- Human Knee Joint**  
Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 386**
- Human Left Ventricle**  
Geometric Modelling of the Human Left Ventricle (TB) **BE 221**
- Human Leg**  
A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) **BE 176**
- Human Motion**  
Three-Dimensional Coordinate Data Processing in Human Motion Analysis **BE 279**
- Human Skeletal Muscle**  
A Quantitative Evaluation of the Frequency-Response Characteristics of Active Human Skeletal Muscle In Vivo **BE 28**
- Human Spine**  
Mechanical Properties of Human Lumber Spine Motionral Bending, and Torsion **BE 48**; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53**  
Technology Transfer in Biokinematics of the Human Spine (78-DET-88) **MD 594**
- Human Subjects**  
Measurements of Temperature Distributions at Electro-Surgical Dispersive Electrode Sites **BE 66**
- Human Wrist**  
Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**
- Hunt, G. W. (reviewer)** Catastrophe Theory: Selected Papers 1972-77 (BR) **AM 237**
- Hunt, J. B.** Squeeze Film Damping of Non-Newtonian Fluids **L 516**
- Hunt, K. H.** Degree of the Input-Output Equations of Certain Geared Five-Bar Mechanisms (78-DET-27) **MD 471**; Limit Positions of Spatial Linkages via Connectivity Sum Reduction (D) (AC) **MD 507**
- Huseyin, K. (author)** Vibrations and Stability of Multiple

Parameter Systems **AM 719**

Hussain, M. A. Note on Apex Singularities of a Wedge-Shaped Crack Under All Modes (BN) **AM 705**

Huslen, R. L. On the Dynamics of a Weighted Bowling Ball (79-WA/APM-17) **AM 937**

Hutchinson, J. R. Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**

Hutchinson, P. The Interaction of Solid or Liquid Particles and Turbulent Fluid Flow Fields—A Numerical Simulation **F 205**

Hwang, Ned H. C. Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141; (D) BE 149; (AC) BE 150**

**Hybrid Finite Elements**

Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**

**Hybrid Marching**

A Hybrid Marching Integration Procedure for the Prediction of Two-Dimensional Supersonic Boundary Layers (D) (AC) **F 400**

**Hybrid Profiling Mechanisms**

Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108**

**Hydration Shells**

A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 195**

**Hydraulic Components**

A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) **MD 656**

**Hydraulic Copying System**

Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/PROD-3) **I 295**

**Hydraulic Fracturing**

Failure of Inclined Boreholes (78-Pet-44) **ERT 232**

**Hydraulic Model**

Velocity Distributions and Turbulence Intensities at Tube-sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**

**Hydraulic Power**

Preliminary Design Study of an Integrated Tail Rotor Servo Power Module (GR) **MD 366**

**Hydraulic System Design**

Reliability, Maintainability, and Performance Issues in Hydraulic System Design (GR) **MD 174**

**Hydraulic Transients**

An Investigation of Pressure Transients in Viscoelastic Pipes (79-WA/FE-10) **F 495**

**Hydraulic Transmissions**

Performance Prediction for an Axial Flow Hydraulic Transmission (78-WA/OCE-5) **I 434**

**Hydraulically Induced Fracture**

A Comparison of the Theories for Predicting Width and Extent of Vertical Hydraulically Induced Fractures **ERT 8**

**Hydrazine**

Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) **I 456**

**Hydrocarbons**

The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) **P 524**

**Hydrodynamic Effects**

Hydrodynamic Effects in a Misaligned Radial Face Seal (78-Lub-12) **L 283; (D) L 290; (AC) L 291**

**Hydrodynamic Film Thickness**

Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231; (D) L 238; (AC) L 239**

**Hydrodynamic Journal Bearings**

Steady State Performance of a Hydrodynamic Journal Bearing With a Pseudoplastic Lubricant **L 497**

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129; (D) L 137; (AC) L 138**

**Hydrodynamic Lubrication**

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145; (D) L 152; (AC) L 153**

Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) **L 275; (D) (AC) L 282**

Fluid-Film Flows of Differential Fluids of Complexity a Dimensional Approach—Applications to Lubrication Theory **L 140**

Isothermal Hydrodynamic Lubrication in Hydrostatic Extrusion of a Work-Hardening Material (TB) **L 386**

**Hydrodynamic Mass**

Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**

**Hydrodynamic Phenomena**

Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**

**Hydrodynamic Pressure**

Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 229; (D) L 229; (AC) L 230**

**Hydrodynamic Stability**

Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**

The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) **AM 499**

**Hydrodynamic-Structural Response Analysis**

Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**

**Hydrodynamics**

Effects of Additive Ejection on Lifting Hydrofoils (77-FE-27) **F 244**

Les instabilités hydrodynamiques en convection libre, forcée et mixte (BR) **AM 958**

**Hydroelastic Stability**

Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

**Hydroelastic Vibrations**

Modeling Hydroelastic Vibrations (BR) **AM 237**

**Hydrofoils**

Effects of Additive Ejection on Lifting Hydrofoils (77-FE-27) **F 244; F 494**

**Hydrogen**

Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**

**Hydromagnetic Flow**

Hydromagnetic Flow Over a Conducting Thick Porous Plate With Hall Effects (BN) **AM 220**

**Hydromechanical Drives**

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) **MD 693**

**Hydrostatic Component**

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**

**Hydrostatic Extrusion**

Isothermal Hydrodynamic Lubrication in Hydrostatic Extrusion of a Work-Hardening Material (TB) **L 386**

**Hydrostatic Foil Bearing**

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 86**

**Hydrostatic Pressure**

A Membrane of Revolution Loaded by Hydrostatic Pressure (BN) **AM 948**

Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**

**Hydrostatic Screw/Nut**

The Flow Self-Regulating Hydrostatic Screw and Nut **L 364**

**Hydrostatic Thrust Bearing**

Centrifugal Effects in Hydrostatic Porous Thrust Bearing (TB) **L 381**

**Hygroscopic Materials**

Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**

**Hyperelastic Tube**

Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**

**Hyperhemispherical Viewports**

Hyperhemispherical Viewports for Underses Applications (78-WA/OCE-2) **I 389; (D) I 376; (AC) I 377**

**Hyperthermia**

Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures **BE 213**

**Hyperthermia Research**

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

**Ice Layers**

Back-Melting of a Horizontal Cloudy Ice Layer with

Radiative Heating **HT 90**

**Ice Ripples**

Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**

**Ice Surface Melting**

Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water **HT 313**

**Identification Method**

Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304**

**Ido, M.**

Construction of Three-Workpiece Lapping Process (78-WA/PROD-7) **I 255**

**Iguchi, I.**

Mechanism of Heat and Momentum Transfer of Combined Free and Forced Convection with Opposing Flow (TN) **HT 573**

**Ihnatowicz, E.**

Experimental Study of Evaporation and Breakdown of Thin Liquid Driven by Shear Stresses (77-WA/HT-7) **HT 712**

**Image Analysis**

Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) **I 54**

**Image Curve**

Symmetrical Algebraic Motions in the Plane (78-DET-40) **MD 15**

**Image Velocimeters**

Laminar Fluid Flow Measurements Employing a White Light Fringe Image Velocimeter (WVIV) (BN) **AM 218**

**Imbedded Stage**

Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**

**Imberger, J.**

Heat Transfer by Forced and Free Convection in a Horizontal Channel with Differentially Heated Ends **HT 417**

**Immersed Tube Banks**

Solids Circulation in Turbulent Fluidized Beds and Heat Transfer to Immersed Tube Banks **HT 391**

**Immersed Tubes**

Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed **HT 397**

**Immiscible Liquid**

Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**

**Impact Injuries**

A Biomechanical Analysis of Head Impact Injuries to Children **BE 250**

**Impact Motion**

Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) **ERT 167**

**Impeller Curves**

Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D) P 39; (AC) P 40**

**Impermeable Media**

Open-Loop Thermosyphons with Geological Applications (79-HT-64) **HT 677**

**Impermeable Plates**

Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**

**Impermeable Rock**

A Comparison of the Theories for Predicting Width and Extent of Vertical Hydraulically Induced Fractures (EN) **ERT 8**

**Impinging Jets**

Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**

Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**

**Implant Design**

Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**

**Implicit Algorithms**

Strongly Implicit Algorithms for Use in Three-Dimensional Natural Convection Studies (TN) **HT 739**

**Implosion Analysis**

Implosion Analysis of Concrete Cylindrical Vessels (TB) **PVT 98**

**Impulsively Loaded Circular Plates**

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**

**Impurity-Defect Interactions**

The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**

**In-Flight Thrust Vectoring Modes**

Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**

## In-Plane Bending

A Note on the Gross Correction for Noncircular Elastic Pipe Bends Under In-Plane Bending (TB) **PVT 102**

## In-Plane Boundary Conditions

Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

## In-Plane Buckling

Initial Postbuckling of Three-Hinged Circular Arch (BN) **AM 954**

## In-Situ Measurements

Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice **ERT 196**

## In-Vessel Handling Machine

The Value of Prototype Testing in the Development of the In-Vessel Handling Machine for FFTF (78-WA/NE-3) **P 651**

## In-Vitro Human Knee

Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**

## Incinerator System

A Unique Approach to the Offshore Gas Disposal Problem: Castellan SALS Production Facilities **ERT 210**

## Inclined Boreholes

Failure of Inclined Boreholes (78-Pet-44) **ERT 232**

## Inclined Crack

The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

## Inclined Rectangular Plate

Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**

## Inclined Round Holes

Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**

## Inclined Surfaces

Mixed Convection on Inclined Surfaces (78-WA/HT-46) **HT 422**

## Inclusions

The Influence of Inclusions on the Toughness and Fatigue Properties of A516-70 Steel **MT 265**

## Incompressible Boundary Layers

Prediction of Incompressible Separated Boundary Layers Including Viscous-Inviscid Interaction **F 466**

## Incompressible Flow

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**

Prediction of Incompressible Turbulent Separating Flow (D) **F 147**; (AC) **F 148**

## Incompressible Materials

Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (78-APM-6) **AM 71**

## Incompressible Power Law Fluid

The Laminar Flat Radial Jet of an Incompressible Power Law Fluid (BN) **AM 210**

**Incropera, F. P.** Free Convection Heat Transfer from Heated Cylinders Immersed in a Shallow Water Layer (TN) **HT 741**; Prediction of Radiation Absorption and Scattering in Turbid Water Bodies (77-HT-47) **HT 63**; A Three-Flux Method for Predicting Radiative Transfer in Aqueous Suspensions **HT 496**

## Indentation Hardness

Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**

## Index Ratios

General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**

## Indirect-Transfer Exchanger

Liquid-Coupled Indirect-Transfer Exchanger Application to the Diesel Engine (78-DGP-21) **P 516**

## Induced Air Flow

Predictions of Induced Air Flow in Hollow Cone Sprays **F 312**

## Inducer Stall

Experimental Study on Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33**; (D) **P 38**; (AC) **P 49**

## Industrial Gas Turbines

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**

## Industrial Machines

Human Factors in Machine Design (78-DET-68) **MD 587**

## Industrial Metals

Measurement of Energy Resources **DS 16**

## Industrial Processes

A Simple Digital Control Scheme for a Class of Multi-Input, Multi-Output Industrial Processes (79-WA/DSC-10) **DS 339**

## Industrial Robots

Optimal Programming of Working Cycles for Industrial Robots **MD 250**

## Industrial Tribology

A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 467**

## Industrial Waste Incineration

The Economics of Energy Recovery From Industrial Waste Incineration **ERT 260**; (D) **ERT 268**; (AC) **ERT 269**

## Inelastic Analysis

Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) **PVT 235**

## Inelastic Behavior

A Note on the Gross Correction for Noncircular Elastic Pipe Bends Under In-Plane Bending (TB) **PVT 102**

## Inelastic Bending

Inelastic Bending of Beams Under Time-Varying Moments—A State Variable Approach (79-PVP-82) **PVT 305**

## Inequalities

Compensation of the Speed Governor of a Water Turbine by the Method of Inequalities **DS 205**

## Inertia Flywheel

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 188**

## Inextensional Deformation

Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/PM-25) **AM 895**

Exact Equations for the Inextensional Deformation of Cantilevered Plates (79-WA/PM-11) **AM 631**

## Infinite Elastic Body

Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**

## Infrared Cameras

Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**

## Infrared Emission Spectroscopy

Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**

## Infrared Pyrometers

Evaluation of Integrating Sphere Surfaces for Infrared Pyrometers (TN) **HT 379**

## Injected Jets

On The Nature of Jets Entering A Turbulent Flow Part A—Jet-Mainstream Interaction **P 459**; Part B—Film Cooling Performance **P 466**

## Injection Holes

Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**

## Inlet Boundary

Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) **L 92**

## Inlet Development

Development of an Inlet for a Tilt Nacelle Subsonic V-STOL Aircraft (78-GT-121) **P 290**

## Inlet Flow Distortions

Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**

## Inlet Installations

Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) **P 572**

## Inlet Nozzle

Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**

## Innovative Methods

Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) **P 556**; (D) **P 562**

**Inoue, S.** Reliability Analysis of Cutting Tools (78-WA/PROD-9) **I 185**

## Input-Output Equations

Degree of the Input-Output Equations of Certain Geared Five-Bar Mechanisms (78-DET-27) **MD 471**

## Input Timing

Selective Precision Synthesis of the Four-Bar Motion Gen-

erator With Prescribed Input Timing (WA/DE-2) **MD 614**

## Insidious Eye Disease

Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**

## Inspection Level Criteria

Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**

## Instabilities

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**

Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**

Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 2: Experiments (79-APM-4) **AM 52**

Experimental Investigation of Unsteady Phenomena in Vanedless Radial Diffusers (78-GT-23) **P 52**; (D) **P 58**; (AC) **P 60**

Experiments on Magnetoelectric Buckling in a Superconducting Torus **AM 145**

Instability of a Fiber-Reinforced Elastic Slab Subjected to Axial Loads **AM 639**

A Note on the Phase Relationships Involved in the Whirling Instability in Tube Arrays (D) **F 530**

Stability of Flow From a Nuclear Cavity (79-FE-5) **F 335**

Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**

Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 660**

## Installation Commissioning

Gas Turbine Commissioning Procedure (78-GT-54) **P 125**

## Instrument Ball Bearings

Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**

## Instrument Probes

Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-147) **P 373**

## Instrumentation Separation

Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/PROD-16) **I 264**

## Insulation

Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) **I 427**

## Integral Equations

A Circular Crack Under Asymmetric Loads and Some Related Integral Equations (79-WA/PM-12) **AM 621**

The Numerical Treatment of Integral Equations (BR) **AM 969**

The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

## Integral Methods

Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**

An Integral Method for Calculating Turbulent Boundary Layer With Separation **F 110**

## Integral Transform Methods

Transient Interaction of a Circular Plate and a Fluid Medium **AM 28**

## Integrated Circuits

The Impact of LSI Technology on Control Engineering (F) **DS 6**

## Integrating Sphere Surfaces

Evaluation of Integrating Sphere Surfaces for Infrared Pyrometers (TN) **HT 379**

## Integration Algorithms

Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) **PVT 226**

## Integration Procedures

A Hybrid Marching Integration Procedure for the Prediction of Two-Dimensional Supersonic Boundary Layers (D) (AC) **F 400**

## Integration Terms

A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**

## Integrity Analyses

Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analyses of Nuclear Reactor Vessels



(79-PVP-16) **MT 182**

**Intensity Factors**  
Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

**Inter-Tube-Pass Leakage**  
Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Exchangers—Part I: Analysis (77-WA/NE-6) **P 8**; Part II: Applications (77-WA/NE-7) **P 16**

**Interactive Computer Graphics**  
Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

**Interactive Modeling**  
Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**

**Interface Crack**  
A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**

**Interface Pressure Distribution**  
Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**

**Interferometers**  
The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 548**

**Interlaminar Crack Growth**  
Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**

**Intermediate Power Engine**  
Marine Spray—SM1A Propulsion Module (78-GT-58) **P 149**

**Intermittent Cross-Feed**  
Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) **I 135**; Part II: The Force Equilibrium (78-WA/PROD-30) **I 141**

**Intermittent Cuts**  
Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) **I 391**

An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**

**Intermittent Mechanisms**  
Multistage Gearing Geneva Mechanism (78-DET-18) **MD 41**

**Intermittent Motion Mechanisms**  
A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 83**

**Internal Axial Flow**  
Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**

**Internal Combustion Engine**  
Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**

**Internal Energy Dissipation**  
Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**

**Internal Flins**  
Analysis of Turbulent Flow and Heat Transfer in Internally Finned Tubes and Annuli **HT 29**

**Internal Pressure**  
Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) **PVT 194**

Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) **PVT 186**

Bifurcation of Elastic-Plastic Circular Cylindrical Shells Under Internal Pressure **AM 589**

Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) **PVT 200**

Plastic Collapse and the Controlling Failure Pressures of Thin 2:1 Ellipsoidal Shells Subjected to Internal Pressure **PVT 84**

Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**

**International Bibliographies**  
International Bibliographies **DS 84, DS 186, DS 278**

**Interpolation Functions**  
Finite Element Analysis of Mindlin Plates (78-WA/DE-6) **MD 619**

**Interrupted-Wall Channels**  
Heat Transfer and Fluid Flow Analysis of Interrupted-Wall Channels, with Application to Heat Exchangers (D) **HT 188**; (AC) **HT 189**

**Intersecting Shells**  
Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) **PVT 194**

**Intervertebral Motion**  
Technology Transfer in Biokinematics of the Human Spine (78-DET-88) **MD 594**

**Inverse Design**  
Inverse Design of Optimal Diffusers With Experimental Corroboration (79-WA/FE-15) **F 478**

**Inverted Cones**  
Calculation of Shape Factors between Rings and Inverted Cones Sharing a Common Axis (D) (AC) **HT 189**

**Inviscid Flow**  
Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**

**Inviscid Flow Considerations**  
A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow. Part 1 — Inviscid Flow Considerations (79-WA/FE-4) **F 415**

**Inviscid Solution**  
Inviscid Solution for the Problem of Free Overfall **AM 1**

**Irradiated Materials**  
Techniques Developed for Elevated Temperature Fracture Toughness Testing of Irradiated Materials in Thin Sections **MT 403**

**Irregular Melting**  
Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**

**Irvine, H. M.**  
A Membrane of Revolution Loaded by Hydrostatic Pressure (BN) **AM 548**

**Isentropic Flow**  
Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**

**Isentropic Streamtube Model**  
An Isentropic Streamtube Model for Flashing Two-Phase Vapor-Liquid Flow (ER) **HT 375**

**Ishiguro, R.**  
Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**

**Ishikawa, H.**  
Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) **PVT 31**

**Isolators**  
Principles and Criteria of Vibration Isolation of Machinery **MD 562**

**Isothermal Plates**  
Local Nonuniformity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate **HT 642**

**Isothermal Wall**  
Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**

**Isotropic Elastic Materials**  
Extrapolation of Strain and Stress From Holographically Measured Surface Displacement **AM 581**

**Isotropic Elasticity**  
On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**

**Isotropic Fibers**  
Analysis of Properties of Fiber Composites With Anisotropic Constituents (79-WA/APM-6) **AM 543**

**Isotropic Materials**  
Green's Functions for Two-Phase Transversely Isotropic Materials **AM 551**

**Isotropic Properties**  
Isotropic Properties of Platelet-Reinforced Media **MT 299**

**Isotropic Scattering**  
An Iterative Solution for Anisotropic Radiative Transfer in a Slab **HT 695**

**Isotropic Solids**  
Consolidation in Transversely Isotropic Solids **AM 65**

**Isotropic Surface**  
Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 185**

**Iterative Methods**  
An Iterative Solution for Anisotropic Radiative Transfer in a Slab **HT 695**

**Ito, M.**  
Frictional Resistance of Enclosed Rotating Cones With Superposed Throughflow **F 259**

**Ito, Y.**  
Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**; An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel

(78-WA/Prod-5) **I 97**

**Ivanović, M.**  
Analysis of Turbulent Flow and Heat Transfer in Internally Finned Tubes and Annuli **HT 29**

**Iwan, W. D.**  
Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) **DS 31**

**J**

**J-Integral**  
Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**; Part II—Fatigue Crack Propagation **MT 182**

**J-Integral Method**  
Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

**Jackson, A.**  
Measurements of the Statistical Microgeometry of Engineering Surfaces (D) (AC) **L 418**

**Jacob, E.**  
Controlling and Measuring for Energy Conservation (F) **DS 5**

**Jacobs, H. R.**  
Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**

**Jain, P. C.**  
Unsteady Mixed Convection Heat Transfer from a Horizontal Circular Cylinder **HT 128**

**Jain, R. K.**  
Transient Temperature Distributions in an Infinite, Perforated Medium due to a Time-Dependent, Spherical Heat Source **BE 82**

**Jaisankar, R. A.**  
A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAS-26) **I 441**

**Jaluria, Y.**  
Fluid Temperature and Mixed Convection Effects in Hot-Wire Measurements of Natural Convection Flows (BN) **AM 231**

**James, L. A.**  
The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 205**; Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

**Jandrasits, W. G.**  
The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 80**

**Jankowski, D. F.**  
Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (78-WA/FE-41) **F 87**

**Janna, W. S.**  
Drop-Size Distributions of Bingham Liquid (PAINT) Sprays Produced by Fan-Jet Pressure Nozzles **I 448**; Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

**Jannerup, O.**  
Modelling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/PROD-6) **I 304**

**Japikse, D.**  
Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**

**Jarzecki, K.**  
Stability Threshold of Flexibly Supported Hybrid Gas Journal Bearings **L 451**

**Jaska, C. E.**  
Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) (AC) **MT 178**

**Jasuja, A. K.**  
Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

**Jeans, A. H.**  
A Wall-Flow-Direction Probe for Use in Separating and Reattaching Flows **F 364**

**Jedruich, W. T.**  
Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**

**Jeffery-Hamel Flow**  
Symmetrical Velocity Profiles for Jeffery-Hamel Flow (BN) **AM 214**

**Jendrzyszczak, J. A.**  
Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 108**

**Jet Airblast Atomizer**  
Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

**Jet Aircraft**  
Alternative Aircraft Fuels (78-GT-59) **P 155**

**Jet Cooling**  
Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**

**Jet Drilling**  
Higher Pump Pressures Can Reduce Drilling Costs **ENT 59**

**Jet-Driven Helmholtz Oscillator**  
Experimental Study of a Jet-Driven Helmholtz Oscillator (78-WA/FE-16) **F 383**



## Jet Flaps

Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 186**

## Jet Flow

Velocity Characteristics of a Confined Coaxial Jet (79-WA/FE-9) **F 521**

## Jet Penetration

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/PROD-11) **I 311**

## Jet Photography

Effect of Nozzle Shape and Polymer Additives on Water Jet Appearance (77-FE-16) **F 304**

## Jet Pumps

Jet Pump Cavitation With Ambient and High Temperature Water **F 93**

## Jet Shape

Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141; (D) BE 149; (AC) BE 150**

## Jet Swelling

Effects of Additive Ejection on Lifting Hydrofoils (D) (AC) **F 404**

## Jets

Correlation of Burnout Data for Disk Heaters Cooled by Liquid Jets (TN) **HT 383**

Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**

Entrainment by a Jet at a Density Interface in a Thermally Stratified Vessel (77-HT-23) **HT 538**

Heat Transfer Characteristics for In-line and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 526**

Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**

The Influence of Geometric Asymmetry on the Flow Downstream of Row of Jets Discharging Normally into a Free Stream (TN) **HT 183**

On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction **P 459; Part B—Film Cooling Performance P 466**

On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets (78-HT-21) **HT 532**

Trajectories of Single and Double Jets Injected into a Crossflow of Arbitrary Velocity Distribution **F 217**

Upper Limit of CHF in the Saturated Forced-Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**

Jewett, C. W. Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) **MT 191**

## Job Scheduling

Aspects of Job Scheduling (78-PEM-A) **I 17**

Jogi, P. N. Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) **ERT 112**

John, J. E. A. Drop-Size Distributions of Bingham Liquid (PAINT) Sprays Produced by Fan-Jet Pressure Nozzles **I 449; Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles I 171**

Johnson, C. A. The Relative Value of Energy Derived From Municipal Refuse (D) **ERT 255; (AC) ERT 258**

Johnson, E. O. Effect of Metal Composition on Carburizing of Steels (TB) **MT 173**

Johnson, G. E. Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) **MD 650; Numerical Investigation of Some Potential Problems of Univariate Minimization Methods MD 663**

Johnson, K. L. The Influence of Fluid Theory on the Performance of Traction Drives (78-Lub-10) **L 266; (D) L 273; (AC) L 274**

Johnson, P. G. Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

Johnson, R. C. A Method of Optimum Design **MD 667**

Johnson, W. R. Blood Perfusion Measurements by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 58**

Johnston, J. P. Free Shear Layer Behavior in Rotating Systems **F 117; (D) (AC) F 120; Turbulent Flow Over a Plane Symmetric Sudden Expansion (D) (AC) F 532; A Wall-Flow-Direction Probe for Use in Separating and Reattaching Flows F 364**

## Joint Angle

Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**

## Joint Axes

A Compendium of Line-Symmetric Four-Bars (78-DET-14) **MD 509**

Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**

## Joint Displacements

Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**

## Joint Freedom

Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504; (D) (AC) MD 507**

## Joint Surfaces

Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**

## Joint Torque Systems

Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**

## Joints

Analysis of Massless Elastic Chains With Servo Controlled Joints **DS 187**

Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**

Computer Simulation of Nonlinear Thermoelectric Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/PROD-31) **I 355**

Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9; Part II: Applications (77-WA/NE-7) P 16**

Jones, A. H. Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117; (editor) Mining Technology for Energy Resources: Advances for the Eighties (BR) ERT 298**

Jones, D. Power Extraction From Ocean Surfaces Waves **ERT 141**

Jones, D. P. Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) **P 210; Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) PVT 249**

Jones, E. Computational Fluid Dynamics Applied to Three-Dimensional Nonreacting Inviscid Flows in an Internal Combustion Engine **F 367**

Jones, E. R. Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 20**

Jones, M. C. An Experimental Study of Thermally-Induced Flow Oscillations in Supercritical Helium **HT 9**

Jones, R. A. (author) Reliability, Availability, and Maintainability Analysis of the LSAP 105MM Assembly Line (GR) **MD 175**

Jones, R. M. Buckling of Rectangular Cross-Ply Laminated Plates With Nonlinear Stress-Strain Behavior **AM 637**

Joslyn, H. D. A Fundamental Criterion for the Application of Rotor Casing Treatment **F 237**

## Journal Bearings

Adiabatic Solutions for Finite Journal Bearings **L 492**

Analysis of Misaligned Grooved Journal Bearings **L 503**

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**

Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**

Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (78-Lub-30) **L 338; (D) (AC) L 348; (Er) L 525**

The Hybrid Isothermal Air Lubricated Journal Bearing **L 444**

A Parametric Study of Journal Bearing Performance: The 80 Deg Partial Arc Bearing **L 486**

Porous Wall Gas Lubricated Journal Bearings: Experimental Investigation **L 466; Theoretical Investigation L 458**

Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 419; (D) L 423**

Stability Threshold of Flexibly Supported Hybrid Gas Journal Bearings **L 451**

Stability and Unbalance Response of Centrally Preloaded

Rotors Mounted in Journal and Squeeze Film Bearings **L 120**

Steady State Performance of a Hydrodynamic Journal Bearing With a Pseudoplastic Lubricant **L 487**

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129; (D) L 137; (AC) L 138**

A Thermohydrodynamic Analysis of Journal Bearings **L 21**

Jude, P. F. An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

Jung, D. J. USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 387; (D) P 404**

Jurlic, D. On the Dynamics of Electrostatically Precipitated Fly Ash (78-WA/Fu-3) **P 584**

Juul, N. H. Diffuse Radiation View Factors from Differential Plane Sources to Spheres (TN) **HT 558**

## K

Kadotani, K. Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298; On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction P 459; Part B—Film Cooling Performance P 466**

Kalaycioglu, S. Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210; Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) MD 417**

Kalder, S. On the Mechanism of Chip Breaking (78-WA/PROD) **I 241**

Kalish, D. The Strain-Rate and Temperature Dependence of 18Ni(350) Maraging Steel Tensile Properties **MT 81**

Kahn, A. Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) **PVT 194**

Kamala, V. The Hybrid Isothermal Air Lubricated Journal Bearing **L 444**

Kameswara Rao, C. V. S. Corrosion Under Random Exposure Conditions (TB) **MT 306; Optimal Design Using Brittle Materials (BN) AM 708**

Kaminski, J. Propulsion System Considerations for the Subsonic V/STOL (78-GT-57) **P 228**

Kamotani, Y. Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**

Kangovi, S. Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) **F 236; (D) F 235; (AC) F 236**

Kannel, J. W. Dynamics of Rolling-Element Bearings—Part II: Cylindrical Roller Bearing Results (D) (AC) **L 311**

Kanninen, M. F. (reviewer) Fracture Mechanics (BR) **AM 967**

Kanury, A. M. Response of Building Components to Heating in a Fire **HT 305**

Kapur, V. K. Centrifugal Effects in Hydrostatic Porous Thrust Lubrication (TB) **L 381**

Karamcheli, S. D. S. R. Contact Problems in Wire Ropes (79-DE-2) **MD 702**

Karmakar, B. M. Amplitude-Frequency Characteristics of Large-Amplitude Vibrations of Sandwich Plates (BN) **AM 230**

Karnopp, D. Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187; Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) DS 50; On the Order of a Physical System Model (F) DS 185; State Variables and Pseudo Bond Graphs for Compressible Thermofluid Systems DS 201**

Kass, J. N. Editorial **MT 181; Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) MT 191**

Kato, S. Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/PROD-3) **I 295**

- Katto, Y.** Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**
- Kau, C. J.** Numerical Simulation of Particulate Motion in Turbulent Gas-Solid Channel Flow (78-WA/FE-37) **F 319**
- Kaufman, A. (author)** Mathematical Model for the Study of the Reliability of Systems (BR) **AP 172**
- Kaul, R. K.** Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113; (reviewer)** The Theory of Elastic Waves and Waveguides (BR) **AM 989**
- Kawabata, N.** Exact Two-Dimensional Analysis Circular Disk Spiral Groove Bearing (Part I) **L 424; (Part II)** **L 431**
- Kawamura, H.** Natural Convection of Mercury in a Magnetic Field parallel to the Gravity **HT 227**
- Kays, W. M.** The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**
- Kazmierksi, Z.** High Stiffness Bearing **L 520; Stability Threshold of Flexibly Supported Hybrid Gas Journal Bearings** **L 451**
- Keer, L. M.** The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) **AM 577**
- Kemink, R. G.** Freezing Controlled by Natural Convection **HT 578; Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube** **HT 23**
- Kennedy, J. F.** Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**
- Kenyon, D. E.** Consolidation in Transversely Isotropic Solids **AM 65; (reviewer)** Continuum Mechanical and Statistical Approaches in the Mechanics of Granular Materials (BR) **AM 987**
- Keogh, G. P.** Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**
- Keyway Design**  
A New Key and Keyway Design (78-WA/DE-7) **MD 338**
- Khan, M. R.** Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**
- Kicks, J. C.** Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) **P 373**
- Kinematic Analysis**  
Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**  
Multiport Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) **MD 258**  
Multistage Gearing Mechanism (78-DET-18) **MD 41**
- Kinematic Chains**  
Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 181**  
Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**
- Kinematic Joints**  
Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**
- Kinematic and Kinetic Analysis**  
Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**
- Kinematic Mapping**  
Symmetrical Algebraic Motions in the Plane (78-DET-40) **MD 15**
- Kinematic Structure**  
Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380; (D)** **(AC)** **MD 385**
- Kinematic Synthesis**  
Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**
- Kinematic Techniques**  
Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**
- Kinematics**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**  
Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 449**  
Technology Transfer in Biokinematics of the Human Spine (78-DET-86) **MD 594**
- Kinetic Behavior**  
Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **DS 37**
- Kinetic Energy**  
The Lancashire Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**
- King, A. I.** Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) **AM 925**
- King, G. G.** Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pat-69) **ERT 66**
- King, M. S.** Determination of Elastic Constants for Human Femurs **BE 193**
- King, R. K.** A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) **MD 656**
- Kingbury, Albert**  
Men of Tribology **L 245**
- Kingsolver, J. B.** Analysis of Diffuse-Specular Axisymmetric Surfaces with Application to Parabolic Reflectors (79-HT-22) **HT 689**
- Kinney, C.** Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**
- Kinoshita, Y.** Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D)** **P 39; (AC)** **P 40**
- Kirmse, R. E.** Investigations of Pulsating Turbulent Pipe Flow (79-WA/FE-12) **F 436**
- Kish, J. G. (author)** Advanced Overrunning Clutch Technology (GR) **MD 366**
- Kitamura, T.** Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**
- Kiyota, M.** An Adaptive Control Policy of Discrete-Time Linear Systems With Random Parameters (TB) **DS 361**
- Kjellström, B.** Predicted Secondary Flows in Triangular Array Rod Bundles (D) (AC) **F 362**
- Klahs, J. W. Jr.** Resonant Excitation of a Spinning, Nutating Plate **AM 132**
- Klaesche, D. G.** Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) **I 378**
- Kleinhenz, W.** Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**
- Knapp, R. H.** Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **I 178**
- Kneidel, K. E.** Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**
- Knight, C. E., Jr. (author)** Calculation Method for Residual Stress Analysis of Filament-Wound Spherical Pressure Vessels (GR) **MD 174**
- Knowles, G. R.** Local and Average Heat Transfer Characteristics for Turbulent Airflow in an Asymmetrically Heated Tube **HT 635**
- Ko, P. L.** Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**
- Kobayashi, A. S.** A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) **PVT 181**
- Kobayashi, S.** Ductile Fracture in Axisymmetric Extrusion and Drawing—Part I: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23; Part 2: Workability in Extrusion and Drawing (78-Prod-B)** **I 36**
- Koegel, R. G. (author)** Aquatic Plant Harvesting—Development of High-Speed Harvesters and Processing and Utilization of Harvested Vegetation (GR) **MD 366**
- Kohli, D.** Human Factors in Machine Design (78-DET-68) **MD 587**
- Kojima, Y.** Friction and Wear of Sintered Cast Iron Products **L 54**
- Kok, K. D.** Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) **P 646**
- Koelsberg, A.** Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**
- Komatsu, T.** Application of J-Integral to High-Temperature Crack Propagation—Part II—Fatigue Crack Propagation **MT 162**
- Komori, T.** Investigation of Freezing of Salt Solutions in Cells **HT 459**
- Kon, H.** Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**
- Konopnicki, T. T.** The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 548**
- Kooker, D. E.** Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**
- Kool, P.** An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D)** **P 245; (AC)** **P 248**
- Kopper, F. C.** Turbulent Boundary Layer Heat Transfer on Curved Surfaces **HT 521**
- Kops, L.** Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and Its Effect on Thermal Deformation (78-WA/PROD-31) **I 355; Nonlinear Thermoelastic Behavior of Structural Joints — Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/PROD-30)** **I 348**
- Koren, Y.** Design of Computer Control for Manufacturing Systems (78-WA/PROD-14) **I 326**
- Korpela, S. A.** Influence of Thermal Radiation on the Temperature Distribution in a Semi-Transparent Solid **HT 76**
- Kortüm, W.** Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) **DS 99**
- Kottapalli, S. B. R.** Drag on an Oscillating Airfoil in a Fluctuating Free Stream **F 391**
- Kotler, J. I.** Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) **I 197**
- Kotzur, J.** A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (D) **P 393; (AC)** **P 395**
- Koyanagi, E. T.** Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 268**
- Koyama, H.** Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23; (D)** **P 29; (AC)** **P 30**
- Krajcinovic, D.** Distributed Damage Theory of Beams in Pure Bending (79-WA/APM-1) **AM 592**
- Kramer, J. M.** Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) **P 228; An Analysis of the Rupture Behavior of Pressurized Fast Reactor Cladding Tubes Subjected to Thermal Transients** **MT 293**
- Kramer, S. H.** Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (WA/DE-2) **MD 614**
- Krause, H. H.** Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592; Erosion-Corrosion Effects on Boiler Tube Metals in a Multisolid Fluidized-Bed Combustor (77-WA/CD-1)** **P 1; (D)** **P 7; (AC)** **P 8**
- Kreider, J. R.** Semisubmersible Rig Motion Studies Offshore of Alaska and Southern California **ERT 182**
- Krempel, E.** A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118; Viscoplasticity Based on Total Strain. The Modeling of Creep With Special Considerations of Initial Strain and Aging** **MT 380**
- Krenk, S.** A Circular Crack Under Asymmetric Loads and Some Related Integral Equations (79-WA/APM-12) **AM 821; Nonstationary Narrow-Band Response and First-Passage Probability (79-WA/APM-18)** **AM 919**
- Kroeger, P. G.** The Propagation of Boiling Boundary Phase-Change Fronts in Moving Fluids (78-WA/FE-18) **F 270**
- Kubaneck, G. R.** Evaporative Heat Transfer and Pressure Drop Performance of Internally-Finned Tubes with Refrigerant 22 **HT 447**
- Kudrka, A. A.** Jet Pump Cavitation With Ambient and High Temperature Water **F 93**
- Kuhn, H. A.** Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**
- Kukai, J. (author)** Mechanical Component Failure Progress Study (GR) **MD 175**
- Kulacki, F. A.** A Note on Thermal Convection in a Saturated, Heat-Generating Porous Layer (TN) **HT 169**
- Kulak, R. F.** Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) **PVT 228**
- Kullgren, T. E.** Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**
- Kumada, T.** Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**

- Kumagai, T.** Film Cooling Effectiveness for Injection from Multihole Holes (78-GT-32) **P 101**
- Kumar, A.** Uniqueness of Plane Strain Deformation of Rigid-Plastic Solids Under Lateral Pressure (BN) **AM 959**
- Kumar, K. L.** A Probe for the Measurement of the Velocity Field **F 143**
- Kumar, S.** Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) **I 278**
- Kumaran, K. S. S.** Finite Element Analysis of Mindlin Plates (78-WA/DE-6) **MD 619**
- Kunze, J. F.** Utilizing Geothermal Resources Below 150 C (300 F) **ERT 124**
- Kurashige, M.** Instability of a Fiber-Reinforced Elastic Slab Subjected to Axial Loads **AM 839**; Twisted-Pore Effect on Fluid Flow, Solid Deformation and Stress in a Poro-Elastic Cylinder **AM 784**
- Kwon, O. K.** Prediction of Incompressible Separated Boundary Layers Including Viscous-Inviscid Interaction **F 466**
- Kwon, Y. D.** Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) **I 173**

## L

### Laboratory Data

- A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) **L 258**; (D) **L 264, 265**; (AC) **L 265**
- The Stolz and ASME-AGA Orifice Equations Compared to Laboratory Data (78-WA/FM-2) **F 483**
- Labyrinth Seal Forces**  
Air Model Tests of Labyrinth Seal Forces on a Whirling Rotor (D) (AC) **P 212**
- Lafferty, J. F.** The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**
- Lagasse, N. A.** A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (D) (AC) **L 170**
- Lagrangian Form**  
Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 101**
- Lahay, J. P.** Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **I 223**
- Lamb, D. W.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**
- Lamb, G. E. R.** Electrical Simulation of Fabric Filtration (ESFF) for Cotton Dust Control (78-Tex-6) **I 65**
- Lambrarian, N. A.** Wear and Thermal Processes in Asbestos-Reinforced Friction Materials **L 481**
- Laminar Boundary-Layer Properties**  
Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**
- Laminar Boundary Layers**  
Laminar Boundary Layer on a Finite Disk in a Rotating Compressible Isothermal Flow **F 166**
- Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers **HT 151**
- Measurements Within Görtler Vortices **F 517**
- Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23**; (D) **P 29**; (AC) **P 30**
- Laminar Bubble Flow**  
Prediction of Incompressible Separated Boundary Layers Including Viscous-Inviscid Interaction **F 466**
- Laminar Compressible Flow**  
Laminar Compressible Flow Over a Stationary Disk in a Rotating Cylinder **F 173**
- Laminar Digital Logic Elements**  
Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers With Positive Feedback (78-WA/DSC-3) (TB) **DS 77**
- Laminar Dispersion**  
On Laminar Dispersion for Flow Through Round Tubes (79-WA/AFM-14) **AM 750**
- Laminar Flat Radial Jet**  
The Laminar Flat Radial Jet of an Incompressible Power Law Fluid (BN) **AM 210**
- Laminar Flow**  
The Laminar Far Wake Flow of a Non-Newtonian Power-Law Fluid **F 331**
- Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) **F 309**

- Numerical Methods in Laminar and Turbulent Flows (BR) **AM 967**
- Two-Dimensional Laminar Flow in Elbows **F 276**
- Vortex Motions Induced by V-Grooved Rotating Cylinders and Their Effect on Mixing Performance (79-FE-2) **F 186**
- Laminar Fluid Flow Measurements**  
Laminar Fluid Flow Measurements Employing a White Light Fringe Image Velocimeter (WFIV) (BN) **AM 218**
- Laminar Free Convection**  
Over-All Heat Transfer from Vertical Cones in Laminar Free Convection: an Approximate Method (TN) **HT 174**
- Laminar Lubrication**  
A General Theory for Laminar Lubrication With Reynolds Roughness **L 8**; (D) **L 537**; (AC) **L 538**
- Laminar Throughflow**  
Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (76-WA/FE-41) **F 87**
- Laminar Transport Phenomena**  
Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction **HT 217**
- Laminar Viscosity**  
A Numerical Study of the Laminar Viscous Incompressible Flow Through a Pipe Orifice (D) **F 289**; (AC) **F 290**
- Laminated Circular Cylindrical Shells**  
Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**
- Laminated Composites**  
Longitudinal Heat Propagation in Three-Phase Laminated Composites at Low Exciting Frequencies (79-WA/APM-2) **AM 557**
- Laminated Plates**  
Buckling of Rectangular Cross-Ply Laminated Plates With Nonlinear Stress-Strain Behavior **AM 637**
- Laminates**  
Residual Thermal Stresses Due to Cool-Down of Epoxy-Resin Composites (79-WA/APM-9) **AM 563**
- Lance, R.** Inelastic Bending of Beams Under Time-Varying Moments—A State Variable Approach (79-PVP-82) **PVT 305**
- Lanchester Damper**  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**
- Land Based Test Site**  
USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397**; (D) **P 404**
- Landau, I. D.** Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**
- Laneville, A.** A Comparison of Correction Methods Used in the Evaluation of Drag Coefficient Measurements for Two-Dimensional Rectangular Cylinders (79-WA/FE-3) **F 506**
- Lapli, V. G.** Determination of Elastic Constants for Human Femurs **BE 193**
- Lapping**  
Construction of Three-Workpiece Lapping Process (78-WA/PROD-7) **I 255**
- Large Bearing Number**  
Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**
- Large Diameter Cylindrical Shells**  
Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**
- Large-Scale Integrated Circuit (LSI) Technology**  
The Impact of LSI Technology on Control Engineering (F) **DS 6**
- Large Scale Vapor Explosions**  
Nucleation Processes in Large Scale Vapor Explosions **HT 280**
- Larsen-Basse, J.** Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**
- Laser Doppler Anemometer**  
Turbulent Flow Over a Plane Symmetric Sudden Expansion **F 348**
- Velocity Distributions and Turbulence Intensities at Tube-Sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**
- Laser-Doppler Anemometry**  
Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**
- Laser Doppler Velocimetry**  
Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**

### Laser Velocimeter

- Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**
- Lateral Bending**  
Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 46**; Part II: Responses in Compression and Shear, Influence of Gross Morphology **BE 53**
- Lateral Bending Wave**  
Peristaltic Pumping by a Lateral Bending Wave **BE 239**
- Lateral Dynamics**  
Lateral Dynamics and Stability of the Skateboard **AM 931**
- Lateral Motion**  
Lateral Motion of an Axially Moving String on a Cylindrical Guide Surface **AM 905**
- Lateral Pressure**  
Uniqueness of Plane Strain Deformation of Rigid-Plastic Solids Under Lateral Pressure (BN) **AM 959**
- Lateral Stability**  
Lateral Stability of Freight Cars With Axles Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**
- Latifovic, V.** Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**
- Lau, S. C.** Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow **F 206**; (D) **F 206**; (AC) **F 207**
- Lauda, J. M.** Stability of Flow From a Nuclear Cavity (79-FE-5) **F 335**
- Lauer, J. L.** Shear Strength Measurements of Lubricants at High Pressure (D) (AC) **L 257**; Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**
- Laurendeau, N. M.** Prediction of Radiation Absorption and Scattering in Turbid Water Bodies (77-HT-47) **HT 63**
- Law, E. H.** Lateral Stability of Freight Cars With Axles Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**
- Layered Elastic Body**  
Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**
- Layered Powder Medium**  
Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**
- Layne, J. L.** An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall in Plane-Wall Diffusers **F 181**
- Leakage Effects**  
Effects of Fluid Leakage on Performance of a Centrifugal Compressor (79-GT-143) **P 337**
- Leakage Rates**  
Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9**; Part II: Applications (77-WA/NE-7) **P 16**
- Least-Squares Synthesis Methods**  
On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) **MD 47**
- Lebeck, A. O.** Hydrodynamic Effects in a Misaligned Radial Face Seal (D) **L 290**; (AC) **L 291**; Stiffness of Straight and Tapered Annular Gas Path Seals (D) **L 354**; (AC) **L 355**
- Leckie, F. A.** The Development of High Temperature Design Methods Based on Reference Stresses and Bounding Theorems **MT 349**
- Lee, C. S.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (D) **L 198**; (AC) **L 200**
- Lee, D.** A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**
- Lee, G. K.** Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**
- Lee, H.** An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) **DS 138**
- Lee, H. Y.** Radiant Exchange for a Fin and Tube Solar Collector (TN) **HT 185**
- Lee, I. P. J.** Dynamic Analysis of Spatial Mechanisms Using Dual Successive Screw Method and D'Alembert's Principle (78-DET-22) **MD 589**
- Lee, J.-I.** Potential Weather Modification Caused by Waste Heat Release from Large Dry Cooling Towers **HT 164**
- Lee, S. L.** A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 185**



**Leleberre, A. H.** Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**

**Legros, J. C.** (editor) Les instabilités hydrodynamiques en convection libre, forcée et mixte (BR) **AM 988**

**Leibovich, S.** (editor) Les instabilités hydrodynamiques en convection libre, forcée et mixte (BR) **AM 988**

#### **Leidenfrost Phenomenon**

Further Contributions to the Study of the Leidenfrost Phenomenon **HT 612**

**Leidenfrost, W.** Latent Heat-of-Fusion Energy Storage: Experiments on Heat Transfer from Cylinders During Melting (78-HT-47) **HT 453**

**Leipholz, H. H. E.** (reviewer) Foundations of Theoretical Mechanics (BR) **AM 718**

**Leitmann, G.** Guaranteed Asymptotic Stability for Some Linear Systems With Bounded Uncertainties **DS 212**

**Lemaitre, J.** Application of Damage Concepts to Predict Creep-Fatigue Failures (78-PVP-26) **MT 284**

**Le May, I.** Determination of Elastic Constants for Human Femurs **BE 193**; Developments in Parametric Methods for Handling Creep and Creep-Rupture Data **MT 226**

**Lenard, J. G.** A Study of Cold Strip Rolling **MT 129**; A Study of Multiple Hole Extrusion **MT 135**

**Lentini, M.** Numerical Solution of the Beam Equation With Nonuniform Foundation Coefficient (79-WA/APM-7) **AM 901**

**Lenz, E.** On the Mechanism of Chip Breaking (78-WA/PROD-21) **I 241**

**Lesh, M. D.** A Gait Analysis Subsystem for Smoothing and Differentiation of Human Motion Data **BE 205**

**Lesemann, R. C.** An Experimental Study of Flow Over a Rectangular Body (78-WA/FE-11) **P 443**

**Levi, R.** Multi-Tool Machining Analysis—Part I Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**; Part II Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

**Levine, M.** Optimum Linear Tapering in the Design of Columns (BN) **AM 956**

**Levinger, R.** Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/PROD-26) **I 285**

#### **Levitation**

A Dynamics Simulation for a High Speed Magnetically Levitated Guided Ground Vehicle **DS 223**

**Lewis, J. L.** The Effect of Soft Tissue on Measurements of Vibrational Bone Motion by Skin-Mounted Accelerometers **BE 218**

**Li, C.** An Elastic Analysis of Multitool Endless Web Systems **DS 366**

**Li, V. C. F.** An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**

**Libai, A.** Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/APM-25) **AM 895**; Exact Equations for the Inextensional Deformation of Cantilevered Plates (79-WA/APM-11) **AM 631**

**Liburdy, J. A.** Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 248**

**Libby, P. A.** (reviewer) Handbook of Turbulence, Volume 1 (BR) **AM 237**

**Liebowitz, H.** (editor) Fracture Mechanics (BR) **AM 987**

**Lienhard, J. H.** Correlation of Burnout Data for Disk Heaters Cooled by Liquid Jets (TN) **HT 383**; Editorial Response (Op) **F 411**; Method for Visualizing High Prandtl Number Heat Convection (TN) **HT 571**; On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**; The Temperature Dependence of Surface Tension of Pure Fluids (Er) **HT 576**

**Lifeline Systems**

Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) **PVT 31**

**Lifelines**

Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) **PVT 10**

**Lift**

Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Lift and Guidance **DS 217**

**Ligament Efficiency**

Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-6) **PVT 210**

**Lignite Ash**

Suphr Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

**Lignite Ash**

Suphr Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

**Lignite Ash**

Suphr Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

**Lignite Ash**

Suphr Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

**Lignite Ash**

Suphr Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

**Lignite Ash**

**Limbert, D. A.** Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Lift and Guidance **DS 217**

**Limit Analysis**

Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**

**Limit Criteria**

Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**

**Limit Positions**

Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504**; (D) (AC) **MD 507**

**Line Contacts**

Reflections on Some Aspects of Lubrication of Concentrated Line Contacts (TB) **L 528**

**Line Elements**

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**

**Line Heat Sink**

Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**

**Line-Symmetric Four-Bars**

A Compendium of Line-Symmetric Four-Bars (78-DET-14) **MD 509**

**Linear Acceleration**

Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) **AM 925**

**Linear Approximation**

Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 263**

**Linear Differential-Difference Equation**

Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **DS 37**

**Linear Elastic Analysis**

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

**Linear Elastic Fracture Mechanics**

Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**

**Linear Elastic Properties**

Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pat-77) **ERT 105**

**Linear Elasticity**

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 138**

**Linear Equations**

Constrained Balancing Techniques for Flexible Rotors (78-WA/DET-8) **MD 304**

**Linear Graphs**

Topological Reaction Force Analysis (78-DET-58) **MD 192**

**Linear Membrane Theory**

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

**Linear Programming**

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**

**Linear Stability**

Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**

**Linear Supposition Technique**

On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) **MD 47**

**Linear Systems**

Commande et Régulation par Calculateur Numérique (BR) **DS 179**

Guaranteed Asymptotic Stability for Some Linear Systems With Bounded Uncertainties **DS 212**

**Linear Tapering**

Optimum Linear Tapering in the Design of Columns (BN) **AM 956**

**Linear Theory**

Resonant Excitation of a Spinning, Nutating Plate **AM 132**

**Linear Thermoelasticity**

Eigenfunctions for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 189**

**Linear Viscoelasticity**

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145**; (D) **L 152**; (AC) **L 153**

#### **Linearization**

Linearized k- $\epsilon$  Analysis of Free Turbulent Mixing in Streamwise Pressure Gradients With Experimental Verification **AM 493**

**Linearization Equations**

Linearization Equations for Vibration Induced By Oscillatory Flow (BN) **AM 946**

**Linearized Analysis**

Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 50**

**Ling, F. F.** (reviewer) Wear: Treatise on Material Science and Technology (BR) **AM 968**

**Link, H. F.** (author) Aquatic Plant Harvesting—Development of High-Speed Harvesters and Processing and Utilization of Harvested Vegetation (GR) **MD 366**

**Link Elements**

Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**

**Linkage Synthesis Solutions**

Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**

**Linkages**

A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**

A Compendium of Line-Symmetric Four-Bars (78-DET-14) **MD 509**

A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**

Degree of the Input-Output Equations of Certain Gated Five-Bar Mechanisms (78-DET-27) **MD 471**

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 89**

Elastodynamics of Planar Mechanisms Using Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**

Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**

Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**

Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**

Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 445**

Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504**; (D) (AC) **MD 507**

Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**

Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 388**

A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 83**

Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**

Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 246**

Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 26**; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 26**

Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**

Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**

**Links**

A Reassessment of Grashof's Criterion (TB) **MD 515**

**Liquid-Coupled Exchanger**

Liquid-Coupled Indirect-Transfer Exchanger Application to



## Load Parameter

Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**

## Load Parameters

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

## Load Requirements

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

## Load Strength

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

## Loaded Holes

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

## Loaded Turbine Exit Guide Vanes

Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

## Loading

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 288**

Analysis of Misalignment in the Tension Test **MT 68**

An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**

Application of J-Integral to High-Temperature Crack Propagation—Part II—Fatigue Crack Propagation **MT 182**

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) **P 563**

Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 188**

Effect of Cyclic Loading on the Yield Surface **PVT 59**

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **I 178**

Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53; (D) (AC) MT 58**

50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 86**

A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 86**

Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) **MT 34**

Lateral Stability of Freight Cars With Axes Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**

Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) **PVT 276**

Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**

A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

Reliability as Materials Property (78-WA/Mat-1) (D) **MT 177**

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**

Uniaxial Cyclic Loading of Elastic-Viscoplastic Materials (79-WA/AM-30) **AM 895**

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

## Loading Conditions

A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**

Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**

## Loading Parameter

A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**

## Loading Rates

The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel **MT 258**

## Loading Techniques

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129; (D) L 137; (AC) L 138**

## Loads

Approximate Eigenvalues for Systems With Variable Parameters (78-WA/AM-29) **AM 263**

A Circular Crack Under Asymmetric Loads and Some Related Integral Equations (79-WA/AM-12) **AM 821**

the Diesel Engine (78-DGP-21) **P 516**

## Liquid Cross Flow

Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 106**

## Liquid Drop Deposition

On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 288**

## Liquid Drops

Further Contributions to the Study of the Leidenfrost Phenomenon **HT 612**

## Liquid Films

Experimental Study of Evaporation and Breakdown of Thin Liquid Films Driven by Shear Stresses (77-WA/HT-7) **HT 712**

A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (TN) **HT 178; (Er) HT 375**

## Liquid Flow Rate

Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**

## Liquid Fuels

Alternative Aircraft Fuels (78-GT-59) **P 155**

## Liquid Jets

Correlation of Burnout Data for Disk Heater, Cooled by Liquid Jets (TN) **HT 383**

Fillet Size in a Liquid Jet (79-FE-1) **F 105; (D) F 108**

## Liquid Mixtures

Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures **HT 617**

## Liquid Particles

The Interaction of Solid or Liquid Particles and Turbulent Fluid Flow Fields—A Numerical Simulation **F 265**

## Liquid Phase

Freezing Controlled by Natural Convection **HT 578**

## Liquid Sodium

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-B-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 205**

## Liquid Sprays

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

## Liquid Wastes

The Economics of Energy Recovery From Industrial Waste Incineration **ERT 260; (D) ERT 288; (AC) ERT 269**

## Liquids

Transient Freezing of Liquids in Turbulent Flow inside Tubes **HT 465**

Lisini, G. G. Optimal Programming of Working Cycles for Industrial Robots **MD 250**

Livermore, D. F. (author) Aquatic Plant Harvesting—Development of High-Speed Harvesters and Processing and Utilization of Harvested Vegetation (GR) **MD 366**

Lloyd, G. J. Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation **MT 275**

## Load Area

Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**

## Load-Bearing Applications

Reliability as a Materials Property (78-WA/Mat-1) **MT 27**

## Load Capacity

An Analytical Study of Starved Porous Bearings **L 38**

## Load Factors

Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**

## Load Levels

Optimization of Power Absorption From Sea Waves **ERT 145**

Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**

Effect of Fixed Axes of Rotation on the Vortex-Vortex and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**

Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231; (D) L 238; (AC) L 239**

Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190; (D) L 198; (AC) L 200**

Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164; (D) (AC) L 170**

Instability of a Fiber-Reinforced Elastic Slab Subjected to Axial Loads **AM 839**

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**

Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**

Local Flexibility

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) **PVT 249**

Local Heat Transfer

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**

Locher, F. A. Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**

Lock Gate Drives

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) **MD 893**

Locomotion

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**

Locomotive Dynamics

The Investigation of Locomotive Dynamics via A Large Degree of Freedom Modeling **I 367**

Locomotives

Comparative Study of the Linear and Non-Linear Locomotive Response **DS 263**

Loerch, R. J. On the Existence of Circle-Point and Center-Point Circles for Three-Precision-Point-Dyad Synthesis (78-DET-44) **MD 554**

Loewenthal, S. H. Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171; (D) L 177; (AC) L 178**

The Influence of Fluid Theology on the Performance of Traction Drives (D) **L 273; (AC) L 274**

Log-Spiral Blade Surfaces

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow Through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**

Logan, D. L. Layered Cylindrical Pressure Vessels (78-PVP-103) **PVT 80**

Logarithmic Normal Distribution

Reliability Analysis of Cutting Tools (78-WA/PROD-9) **I 185**

Lohar, B. L. Unsteady Mixed Convection Heat Transfer from a Horizontal Circular Cylinder **HT 126**

Lohmann, R. P. Swirling Flow Through Annular Diffusers With Conical Walls **F 224**

Lombard, W. K. The Economics of Energy Recovery From Industrial Waste Incineration **ERT 260; (D) ERT 268; (AC) ERT 269**

Longitudinal Compressive Loads

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

Longitudinal Contractions

Fluid Mechanics of Longitudinal Contractions in the Small Intestine **BE 284**

Longwell, J. P. Alternative Aircraft Fuels (78-GT-59) **P 155**

Look, D. C. Two-Dimensional Scattering from a Medium of Finite Thickness (TN) **HT 556**

Lorenz, J. J. Entrapment by a Jet at a Density Interface in a Thermally Stratified Vessel (77-HT-23) **HT 538**

A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (ER) **HT 375**

A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (TN) **HT 178**

Loss, F. J. Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) **PVT 298**

Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) **PVT 242**

## Loss Coefficients

Velocity Distributions and Turbulence Intensities at Tube-sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**

## Loss-of-Coolant Accident

Investigation of Warm Pressures for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) **PVT 258**

The Thermal-Hydraulic Phenomena Resulting in Early Critical Heat Flux and Rewet in the Semicore Core **HT 43**

## Loss Correlation

A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**

## Loss Evaluation

Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

Louther, J. D. Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

## Louvers

Time Optimum Control of a Two Capacity Thermal Environment System With Louvers **DS 150**

Love, T. J. Thermography as a Means of Blood Perfusion Measurement **BE 245**

Love, W. J. A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) **PVT 181**

Lovelace, R. B. Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 300**

Lovely, S. W. An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts (78-WA/PTC-1) **P 555**

## Low-Cycle Fatigue

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) **P 583**

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

Verification of Specimens for Low-Cycle Fatigue and Cyclic Plasticity Testing **PVT 321**

## Low Elastic Modulus

Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) **L 92**

## Low Emission Combustor

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

## Low Frequency Bloch Waves

Low Frequency Bloch Waves for Wave Equations Whose Speed is a Deterministic, or Randomlike, Periodic Function (D) (AC) **AM 235**

## Low Frequency Response

Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**

Lowen, G. G. The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 89**

## Lower Bounds

Improved Lower Bounds for Buckling Loads and Fundamental Frequencies of Beams (BN) **AM 698**

Lubrano, D. Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (D) **L 177**; (AC) **L 178**

## Lubricant Viscosity

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) **L 154**; (D) **L 161**; (AC) **L 162**

## Lubricants

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190**; (D) **L 198**; (AC) **L 200**

Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171**; (D) **L 177**; (AC) **L 178**

Friction and Wear of Sintered Cast Iron Product **L 54**

Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) **L 251**; (D) (AC) **L 257**

Steady State Performance of a Hydrodynamic Journal Bearing With a Pseudoplastic Lubricant **L 497**

## Lubricated Extrusion

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **L 319**

## Lubricated Journal Bearings

Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**

## Lubrication

Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220**; (D) **L 229**; (AC) **L 230**

Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) **L 92**

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164**; (D) (AC) **L 170**

A General Theory for Laminar Lubrication With Reynolds Roughness **L 8**

Isothermal Hydrodynamic Lubrication in Hydrostatic Extrusion of a Work-Hardening Material (TB) **L 386**

Lubrication With Micropolar Liquids and Its Application to Short Bearings **L 356**

Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 98**

An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (78-Lub-27) **L 327**; (D) (C) **L 337**

A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 185**

Reflections on Some Aspects of Lubrication of Concentrated Line Contacts (TB) **L 528**

A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 407**

Study of Polyphenyl Ether Fluid (SPA) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**

Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**

A Thermohydrodynamic Analysis of Journal Bearings **L 21**

## Lubrication Flow

Lubrication Flow of a Particle-Fluid Mixture (BN) **AM 211**

## Lubrication Theory

Fluid-Film Flows of Differential Fluids of Complexity  $n$  Dimensional Approach—Applications to Lubrication Theory **L 140**

Ludtke, P. R. An Experimental Study of Thermally-Induced Flow Oscillations in Supercritical Helium **HT 9**

Ludwig, G. R. A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305**; (D) **P 313**; (AC) **P 314**

Luhre, R. A. Two-Dimensional Dynamics of Tracked Ram Air Cushion Vehicles With Fixed and Variable Winglets (79-WA/DSC-11) **DS 321**

## Lumber Spine Motion Segments

Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 48**; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53**

## Lumped Mass Systems

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**

Elastodynamics of Planar Mechanisms Using Planar Actual Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**

## Lumped Parameter Model

A Simulation of the Dynamics of Counterpulsation **BE 105**

## Lung Tissue Elasticity

Constitutive Equation of Lung Tissue Elasticity **BE 38**

Luscher, U. Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) **ERT 128**

Luus, R. Optimum Linear Tapering in the Design of Columns (BN) **AM 956**

Lysell, H. G. Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods (D) **F 434**; (AC) **F 435**

Lynnworth, L. C. Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**

Lyon, R. H. (author) Statistical Energy Analysis of Dynamical Systems: Theory and Application (BR) **AP 172**

Lyons, D. W. Determination of Fiber Cross-Sectional Circularity From Measurements Made in a Longitudinal

View (78-Tex-1) **I 59**; Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) **I 54**

# M

Mable, H. H. Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**

Maccalum, N. R. L. The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**

## Machine Components

Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**

## Machine Design

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**

Human Factors in Machine Design (78-DET-68) **MD 587**

## Machine Element

The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

## Machine Settings

Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) **I 135**; Part II: The Force Equilibrium **I 141**

## Machine Tools

Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and Its Effect on Thermal Deformation (78-WA/PROD-31) **I 355**

Nonlinear Thermoelastic Behavior of Structural Joints—Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/PROD-30) **I 348**

## Machinery

Principles and Criteria of Vibration Isolation of Machinery **MD 682**

## Machining Analysis

Multi-Tool Machining Analysis—Part I: Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**; Part 2: Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

## Machining Operations

Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) **I 391**

## Machining Parameters

Reliability Analysis of Cutting Tools (78-WA/PROD-9) **I 185**

## Machining Speed

Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 125**

## Machining Tools

Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

Mackolek, J. R. (author) Preliminary Design Study of an Integrated Tail Rotor Servo Power Module (GR) **MD 366**

Machisac, B. D. An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

MacPherson, P. B. (author) The Background to Current Theories of Scuffing (GR) **MD 367**

## Macroscopic Fracture Criterion

Diametral Compressive Testing Method **MT 139**

Maddaus, A. D. An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) (AC) **F 294**

Madsen, N. Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 78**

Maewal, A. Homogenization for Transient Heat Conduction (BN) **AM 945**

Magos, R. A. Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**

## Magnetic Energy Storage

Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**

## Magnetic Fields

Boundary-Layer Growth in Three Dimensions With Aligned Magnetic Field (BN) **AM 228**

Hydrodynamic Flow Over a Conducting Thick Porous Plate With Hall Effects (BN) **AM 220**

Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity HT 227

**Magnetic Levitation**  
A Dynamics Simulation for a High Speed Magnetically Levitated Guided Ground Vehicle DS 223

**Magnetoelastic Buckling**  
Buckling of a Superconducting Ring in a Toroidal Magnetic Field AM 151  
Experiments on Magnetoelastic Buckling in a Superconducting Torus AM 145

**Magnetosphere**  
Measurement of the Auroral-Induced Current in the Trans-Alaska Pipeline ERT 156

**Mahan, J. R.** Analysis of Diffuse-Specular Axisymmetric Surfaces with Application to Parabolic Reflectors (79-HT-22) HT 689

**Mahanty, S. D.** The Effect of Pressure on Skin Temperature Measurements for a Disk Sensor BE 261; Skin Temperature Probe BE 232

**Mahab, M. A.** National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) ERT 82; Part II: Rock Mechanics Evaluation (78-Pet-64) ERT 87

**Main Condensers**  
Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) P 483

**Mainstream Turbulence Intensity**  
On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction P 459; Part B—Film Cooling Performance P 466

**Mainstream Variables**  
Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) P 298

**Maintenance Assessment**  
Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) P 640

**Majumdar, B. C.** Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings L 48; A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) L 242

**Maki, M.** A Study on Hourglass Worm Gearing with Constant Side-Roll Ratio MD 274

**Makihata, T.** Trajectories of Single and Double Jets Injected into a Crossflow of Arbitrary Velocity Distribution F 217

**Malhotra, R. C.** A Probe for the Measurement of the Velocity Field F 143

**Malin, S.** Electrochemical Grinding of WC-Co Cemented Carbides (78-WA/PROD-26) I 285

**Mahvern, L. E.** Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate MT 248

**Manager's Guide**  
Project Manager's Guide (GR) MD 366

**Mandal, K. K.** Boundary-Layer Growth in Three-Dimensions With Aligned Magnetic Field (BN) AM 226; Hydromagnetic Flow Over a Conducting Thick Porous Plate With Hall Effects (BN) AM 220

**Mandel, S. W.** Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins HT 514

**Mandell, D. A.** Surface Radiative Exchange in Rod Bundles (TN) HT 378

**Manglavacchi, A.** Fatigue Analysis of Offshore Structures ERT 218

**Mangrum, E., Jr.** Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) MD 322

**Manipulator Control Synthesis**  
Simulation and Control Synthesis of Manipulator in Assembling Technical Parts DS 332

**Manipulators**  
The Application of Model-Referenced Adaptive Control to Robotic Manipulators DS 193

**Mansour, J. M.** A Gait Analysis Subsystem for Smoothing and Differentiation of Human Motion Data BE 205

**Manual Procedure**  
A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) MD 355

**Manufacturing Methods**  
A Survey of Cam Manufacture Methods (78-DET-65) MD 455

**Manufacturing Systems**  
Design of Computer Control for Manufacturing Systems (78-WA/PROD-14) I 326  
Reliability Analysis of Parallel Manufacturing Systems with

Two Machines (78-WA/PROD-8) I 250

**Mann, R. M.** Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) P 620

**Manson, S. S.** A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data MT 317

**Maraging Steel Tensile Properties**  
The Strain-Rate and Temperature Dependence of 18Ni(350) Maraging Steel Tensile Properties MT 91

**March, P. A.** Velocity Distributions and Turbulence Intensities at Tubesheets in a Two-Pass Condenser Model (78-JPGC-NE-6) P 490

**Margolis, D.** Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) MD 167

**Margolis, D. L.** Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) DS 50

**Marine Risers**  
Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) ERT 159

**Marine Spey**  
Marine Spey—SM1A Propulsion Module (78-GT-58) P 149

**Markho, P. H.** An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing L 28; Reflections on Some Aspects of Lubrication of Concentrated Line Contacts (TB) L 528

**Markowski, S. J.** Swirling Flow Through Annular Diffusers With Conical Walls F 224

**Marshall, R. S.** Symmetrical Velocity Profiles for Jeffery-Hamel Flow (BN) AM 214

**Martin, C. S.** Pressure Pulse Propagation in Two-Component Slug Flow F 44

**Martin, F. A.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (D) L 199; (AC) L 200; Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (D) L 161; (AC) L 162

**Marul, E.** Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/PROD-3) I 295

**Mashimo, T.** Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) P 337

**Mass**  
Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids AM 519  
Vibration of Beams Carrying Discrete Dampers and Masses MD 317

**Mass, E. A.** Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate HT 199

**Mass Flow**  
Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) P 440; (D) P 448; (AC) P 449

**Mass Flux**  
Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel AM 21

**Mass Parameters**  
Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) MD 246

**Mass Transfer**  
Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials HT 205  
Effects of Mass Transfer and Free-Convection Currents on the Flow Past an Impulsively Started Vertical Plate AM 757  
Heat Transfer in the Meniscus Thin-Film Transition Region HT 543  
Investigation of Freezing of Salt Solutions in Cells HT 459  
Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers HT 151  
Low Peclet Number Heat and Mass Transfer from a Drop in an Electric Field HT 484  
Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall F 121

**Massless Elastic Chains**  
Analysis of Massless Elastic Chains With Servo Controlled Joints DS 187

**Masuda, S.** Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) P 23; (D) P 29; (AC) P 30

**Material Displacement**  
Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) I 104

**Material Science**  
Wear. Treatise on Material Science and Technology (BR) AM 968

**Materials**  
Effects of Nonlinear Stress-Strain Rate Relation on Deformation and Fracture of Materials in Creep Range MT 369

**Materials Problems**  
Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant MT 105

**Materials Property**  
Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) P 320  
Reliability as a Materials Property (78-WA/Mat-1) MT 27; MT 177

**Mates, R. E.** Contractile Filament Stress in the Left Ventricle and Its Relationship to Wall Stress BE 225

**Mathematical Formulation**  
Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing AM 83

**Mathematical Models**  
Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) P 328  
Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) MD 108  
Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) AM 37  
Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) P 87  
A Mathematical Model for Drill Point Design and Grinding (78-WA/PROD-35) I 333  
Mathematical Models for the Study of the Reliability of Systems (BR) Ap 172  
Response of Building Components to Heating in a Fire HT 365  
A Study of Cold Strip Rolling MT 129  
A Study of Multiple Hole Extrusion MT 135  
Mathematical Modelling of Textile Weave Room Sound Propagation (78-Tex-3) I 69

**Mathis, W. J.** Jet Cooling at the Rim of a Rotating Disk (78-GT-25) P 68

**Matsunaga, M.** Friction and Wear of Sintered Cast Iron Products L 54

**Matrix-Exponential Method**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) MD 417

**Matrix Representation**  
Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) MD 488

**Matsuzaki, Y.** Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) AM 31

**Matthew, G. K.** An Alternative to Euclid's Algorithm (78-DET-41) MD 582; (D) MD 586; Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) MD 246

**Mayer, J. E., Jr.** An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) I 159

**Mayer, M., Jr.** Textile Machinery Research 1948-1978 (78-Tex-8) I 45

**Mayfield, J. K.** Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) BE 124

**Mayle, R. E.** Turbulent Boundary Layer Heat Transfer on Curved Surfaces HT 521

**Mayne, R. W.** A Contour Scheme for Design Optimization (78-WA/DE-13) MD 349; A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) MD 355

**Mazzawy, R. S.** A Fundamental Criterion for the Application of Rotor Casing Treatment F 237; A Rotating Stall Control System for Turbojet Engines (D) P 313; (AC) P 314

**Mazzei, P.** Further Contributions to the Study of the Leidenfrost Phenomenon HT 612

**McAllister, K. W.** Water Tunnel Visualizations of Dynamic Stall F 376

**McDaniel, C. T.** Surface Radiative Exchange in Rod Bundles (TN) HT 378

**McEligot, D. M.** Symmetric Sink Flow Between PARALLEL Plates (Er) F 390

**McFarland, C. B., Jr.** Capabilities to Determine Rock Properties at Simulated Geothermal Conditions



- (78-Pet-31) ERT 117
- McLaman, C. W.** Editorial MD 169
- McKay, J. T.** Flow in a Whirling Rotor Bearing AM 767
- McKnight, D.** Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) P 349
- Mean Temperature Flow**
- Calculation of Mean Temperature Difference in Air-Cooled Cross-Flow Heat Exchangers HT 511
- Mears, D. T.** Analysis of Diffuse-Specular Axisymmetric Surfaces with Application to Parabolic Reflectors (79-HT-22) HT 689
- Measured Coefficients**
- Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) L 129; (D) L 137; (AC) L 138
- Measured Emissions**
- Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) P 422
- Measured Interface Pressure Distribution**
- Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) MD 330
- Measured Parameters**
- An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) P 405
- Measured Power Loss**
- Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) L 154; (D) L 161; (AC) L 162
- Measured Pressure**
- Experimental Investigation of Unsteady Phenomena in Vaned Radial Diffusers (78-GT-23) P 52; (D) P 59; (AC) P 60
- Measured Purify**
- The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) P 477
- Measured Stress**
- Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods F 429; (D) F 434; (AC) F 435
- A New Key and Keyway Design (78-WA/DE-7) MD 338
- Measured Temperatures**
- Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) P 326
- On the Nature of Jet Entering A Turbulent Flow Part A—Jet Mainstream P 459
- Measured Values**
- Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) PVT 149
- Measured Velocity**
- Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter HT 256
- Measured Velocity Components**
- Velocity Distributions and Turbulence Intensities at Tube-sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) P 496
- Measured Wall Pressures**
- Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) P 358
- Measured Wave Motions**
- Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) ERT 112
- Measurement Analysis**
- On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) I 109
- Measurement Calculations**
- The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) I 211
- Measurement and Control**
- On the 1978 ASME Winter Annual Meeting Forum Theme—"Measurement and Control Serving Mankind" (F) DS 4
- Measurement of Energy Resources DS 16
- Measurement Data**
- Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) HT 353
- Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) HT 359
- Measurement Errors**
- Thin Disk On A Convectively Cooled Plate—Application To Heat Flux Measurement Errors HT 346
- Measurement Probe**
- A Probe for the Measurement of the Velocity Field F 143
- Measurement Procedure**
- Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) L 180; (D) (AC) L 188
- Measurement Series**
- The Statistical Nature of Fatigue Crack Propagation MT 148
- Measurement Technique**
- Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface HT 211
- Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) P 42
- Turbulent Flow Over a Disk Normal to a Wall (79-WA/FE-7) F 461
- Measurement Technology**
- Controlling and Measuring for Energy Conservation (F) DS 5
- Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) P 373
- Measurement Tests**
- Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions HT 306
- Measuring Void Fraction**
- Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles HT 295
- Mechanical Arrestor**
- An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines PVT 51
- Mechanical Behavior**
- Combining Phenomenology and Physics in Describing the High Temperature Mechanical Behavior of Crystalline Solids MT 387
- Mechanical Behavior of Metals in Dynamic Compression MT 238
- Mechanical Components**
- Mechanical Component Failure Prognosis Study (GR) MD 175
- A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) MD 656
- Mechanical Design**
- Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) P 259
- Mechanical Energy Stability Criterion**
- On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion HT 276
- Mechanical Failure**
- Mechanical Failure—Definition of the Problem (GR) MD 175
- Mechanical Properties**
- Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation MT 154; Part II—Fatigue Crack Propagation MT 162
- Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) PVT 149
- Dynamic Fracture Initiation: A Comparison of Two Experimental Methods MT 163
- Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) ERT 112
- Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses PVT 155
- Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice ERT 196
- Friction and Wear of Sintered Cast Iron Products L 54
- The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement MT 114
- Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Met-3) MT 18
- Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion BE 46; Part II: Responses in Compression and Shear; Influence of Gross Morphology BE 53
- Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement MT 98
- Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) MT 47
- Mechanical Response**
- Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) ERT 117
- Mechanical Scanners**
- Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) P 373
- Mechanical Stressing**
- Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) P 446; (D) P 448; (AC) P 449
- Mechanical System Optimization**
- A State Space Method for Optimal Design of Vibration Isolators MD 309
- Mechanical Systems**
- Analysis of Rotter/Ball Vibrations (D) (AC) MD 519
- Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) MD 199
- Topological Reaction Force Analysis (78-DET-58) MD 192
- Vibration of Beams Carrying Discrete Dampers and Masses MD 317
- Mechanism Optimization**
- Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) MD 392
- Mechanisms**
- Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) MD 187
- Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) MD 32
- Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) I 121
- Contribution to Computer Construction of Active Chain Models Via Lagrangian Form AM 181
- Degree of the Input-Output Equations of Certain Gearing Five-Bar Mechanisms (78-DET-27) MD 471
- Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) MD 99
- Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) MD 216
- Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) MD 224
- Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) MD 108
- Dynamic Accuracy of Profiling Mechanisms in Cam Manufacturing MD 519
- The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part II: Application and Experiment (78-DET-24) MD 89
- Elastodynamics of Planar Mechanisms Using Planar Actual Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) MD 417
- A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet MT 80
- Frictional Wear Mechanisms (GR) MD 366
- Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) MD 398
- Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) MD 238
- Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) MD 407
- An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) AM 186
- On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow HT 298
- Multiparametric Optimization of Four-Bar Linkages (78-DET-7) MD 386
- Multistage Gearing Geneva Mechanism (78-DET-18) MD 41
- A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) MD 83
- Nucleation Processes in Large Scale Vapor Explosions HT 280
- Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) MD 380; (D) (AC) MD 385
- Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) MD 246
- Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) MD 20; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) MD 26
- A Reassessment of Grashof's Criterion (TB) MD 515
- Strengthening Mechanisms in High-Speed Steel as Related



- to Tool-Life (78-WA/PROD-15) **I 217**  
Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**  
Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**  
On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**
- Mechanisms Design**  
On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) **MD 47**
- Medical Devices**  
Biomaterials, Medical Devices, and Artificial Organs (BR) **MD 363**
- Meena, B. K.** Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers **HT 151**
- Meguid, S. A.** Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate **MT 248**
- Melt Spinning**  
Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) **I 73**
- Melting**  
Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 598**  
Freezing Controlled by Natural Convection **HT 578**  
Latent Heat-of-Fusion Energy Storage: Experiments on Heat Transfer from Cylinders During Melting (78-HT-47) **HT 453**  
Melting about a Horizontal Row of Heating Cylinders (TN) **HT 732**  
The Stefan Problem of a Polymorphous Material (79-WA/APM-29) **AM 789**  
A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection **HT 592**
- Melting Behavior**  
Effect of Composition on Melting Behavior of Coal Ash (78-WA/CD-2) **P 497**
- Melting Substrate**  
Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**
- Melting Surfaces**  
Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water **HT 313**
- Mehrlie, J. G.** Fluid Mechanics of Longitudinal Contractions in the Small Intestine **BE 284**
- Membrane Mode Solutions**  
Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**
- Membrane of Revolution**  
A Membrane of Revolution Loaded by Hydrostatic Pressure (BN) **AM 948**
- Membranes**  
Dynamic Response of a Membrane With Both Curved and Straight Line Boundaries **AM 667**
- Meniscus Profile**  
An Evaporating Ethanol Meniscus—Part I: Experimental Studies **HT 55**; Part II: Analytical Studies **HT 59**
- Merchant, H. C.** Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**  
Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**
- Merkil, P.** Observation of Flow in a Ring Inlet Chamber **F 135**
- Merle, R. L.** The Economics of Energy Recovery From Industrial Waste Incineration (D) (AC) **ERT 269**
- Merritt, R. P.** Measurement of the Auroral-Induced Current in the Trans-Alaska Pipeline **ERT 156**
- Mertol, A.** The Transient and Stability Behavior of a Natural Convection Loop **HT 684**
- Merzer, A.** Analytical Formulation of a Rate and Temperature Dependent Stress - Strain Relation **MT 254**
- Meserole, F. B.** Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**
- Meshing Spur Gears**  
Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**
- Metal Bearings**  
Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 95**
- Metal Coatings**  
Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**
- Metal Combination**  
Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 212**
- Metal Composition**  
Effect of Metal Composition on Carburizing of Steels (TB) **MT 173**
- Metal Cutting**  
Flow Stress Model in Metal Cutting (78-WA/Prod-27) **I 403**; (D) (AC) **I 415**  
On the Mechanism of Chip Breaking (78-WA/PROD-21) **I 241**  
Reliability Analysis of Cutting Tools (78-WA/PROD-9) **I 185**  
Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**
- Metal Fatigue**  
The Statistical Nature of Fatigue Crack Propagation **MT 148**
- Metal Forming Process**  
Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**
- Metal Liners**  
Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) **PVT 200**
- Metal-Matrix Composites**  
Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**
- Metal Surface Temperature**  
Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**
- Metal Surfaces**  
Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**
- Metal Wastage Measurements**  
Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-solids Fluidized-Bed Coal Combustor (77-WA/CD-1) **P 1**; (D) **P 7**; (AC) **P 8**
- Metallurgical Components**  
Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**
- Metallurgical Materials**  
Materials for Human Implantation **BE 2**
- Metallurgical Properties**  
Solidification of a Sphere: The Effects of Thermal Contraction - Density Change Upon Freezing **AM 83**
- Metallurgical Analysis**  
Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**
- Metals**  
Creep of Metals and Plastics Under Combined Stresses, A Review **MT 365**  
A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**  
An Engineering Approach for Cumulative Damage in Metals Under Creep Loading **MT 337**  
An Investigation of Multi-Axial Creep Characteristics of Metals **L 356**  
Mechanical Behavior of Metals in Dynamic Compression **MT 238**  
A Physically Consistent Method for the Prediction of Creep Behavior of Metals (79-WA/APM-24) **AM 800**  
Reliability as a Materials Property (78-WA/Mat-1) **MT 27**
- Metastable Liquids**  
Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures **HT 617**
- Metcalfe, R.** Hydrodynamic Effects in a Misaligned Radial Face Seal (D) **L 290**; (AC) **L 291**
- Methane**  
Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**
- Method of Inequalities**  
Design of Multivariable Controllers for an Advanced Turbopump Engine by Zakian's Method of Inequalities **DS 299**
- Method of Optimum Design (MOD)**  
A Method of Optimum Design **MD 667**
- Metzger, D. E.** Heat Transfer Characteristics for In-line and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 526**; Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**
- Metzner, R. C.** Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice **JERT 196**
- Meyer, B. A.** Natural Convection Heat Transfer in Moderate Aspect Ratio Enclosures **HT 655**
- Meyer, F. J.** Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**
- Meyer, T. G.** A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) **P 583**
- Miao, H.** Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**
- Michalopoulos, C. D.** Improved Lower Bounds for Buckling Loads and Fundamental Frequencies of Beams (BN) **AM 696**
- Microgeometry**  
Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) **L 409**; (D) (AC) **L 418**
- Microlayers**  
An Analytical Estimate of the Microlayer Thickness in Nucleate Boiling (TN) **HT 180**
- Micropolar Liquids**  
Lubrication With Micropolar Liquids and Its Application to Short Bearings **L 356**
- Microprocessor Based Controller**  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64**; (D) **DS 69**; (AC) **DS 70**
- Microprocessor Controlled Drill Grinder**  
A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**
- Microprocessor-Controlled Test Systems**  
A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) **MD 656**
- Microstructural Inhomogeneity**  
Influence of Microstructural inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**
- Microstructural Role**  
The Strain-Rate and Temperature Dependence of 18Ni(350) Maraging Steel Tensile Properties **MT 81**
- Microwave Applicator**  
Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**
- Midha, A.** A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**; A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**
- Mihailkanin, A. (author)** Update to Reliability and Maintainability Planning Guide to Army Aviation Systems and Components (GR) **MD 175**
- Mikolajewicz, J.** Experimental Study of Evaporation and Breakdown of Thin Liquid Films Driven by Shear Stresses (77-WA/HT-7) **HT 712**
- Mikowicz, J. (author)** The Theory of Elastic Waves and Waveguides (BR) **AM 968**
- Mikulcik, E. C.** Application of Sensitivity Analysis to Car-Trailer Stability (TB) **DS 272**
- Miles, J. B.** An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) **F 292**; (AC) **F 293**
- Miles, J. W.** On the Damped Oscillations of a Weakly Nonlinear Pendulum (BN) **AM 213**
- Millett, D. L.** Evaporative Heat Transfer and Pressure Drop Performance of Internally-Finned Tubes with Refrigerant 22 **HT 447**
- Military Aircraft**  
Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-86) **P 195**
- Miller, A. K.** Combining Phenomenology and Physics in Describing the High Temperature Mechanical Behavior of Crystalline Solids **MT 387**
- Miller, D. S.** An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall (D) (AC) **F 405**
- Miller, R. J.** Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**
- Miller, R. K.** Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: SH Motion (79-WA/APM-5) **AM 625**
- Miller, R. W.** The Stolz and ASME-AGA Office Equations Compared to Laboratory Data (78-WA/FM-2) **F 483**
- Miller, T. W.** The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-86) **ERT 340**
- Mills, A. F.** Average Nusselt Numbers for External Flows (TN) **HT 734**; Calculation of Variable Property Turbulent Friction and Heat Transfer in Rough Pipes **HT 469**
- Mills, W. J.** The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 205**

**Miner, J. R.** Topological Reaction Force Analysis (78-DET-58) **MD 192**

#### Mindlin Plates

Finite Element Analysis of Mindlin Plates (78-WA/DE-6) **MD 619**

#### Mine Stability

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-PET-75) **ERT 82**

#### Mineral Matter

Influence of the Distribution of Mineral Matter in Coal on Fireside Ash Deposition (78-WA/CD-4) **P 586**

#### Minicomputers

Optimal Programming of Working Cycles for Industrial Robots **MD 250**

#### Minimum Commitment Method

A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data **MT 317**

#### Minimum Crack Spacing

Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-PET-62) **ERT 34**

#### Minimum-Time State Reconstruction

Observer Design for the Minimum-Time State Reconstruction of Linear Discrete-Time Systems **DS 350**

#### Minimum-Weight Design

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

#### Mining Technology

Mining Technology for Energy Resources: Advances for the Eighties (BR) **JERT 206**

**Mioduchowski, A.** Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**; Waves From Suddenly Punched Hole in Plate Subjected to Uniaxial Tension Field (79-WA/AFM-32) **AM 673**

#### Misaligned Journal Bearings

Analysis of Misaligned Grooved Journal Bearings **L 503**  
An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**

#### Misaligned Radial Face Seal

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**

#### Misalignment Analysis

Analysis of Misalignment in the Tension Test **MT 60**

#### Mist Flow

Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 795**

#### Mist Formation

Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**

**Mitani N., Yoshito** Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**

**Mitchell, J. W.** Natural Convection Heat Transfer in Moderate Aspect Ratio Enclosures **HT 655**

**Mitchell, L. O.** Analysis of Roller/Ball Vibrations (D) (AC) **MD 519**

**Mitchell, W. S.** Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

**Mithraly, E. M.** The Laminar Far Wake Flow of a Non-Newtonian Power-Law Fluid **F 331**

#### Mission Loading

A Cumulative Fatigue Damage Model for Gas Turbine Engine Disks Subjected to Complex Mission Loading (78-WA/GT-14) **P 583**

**Mital, N. K.** Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) **AM 925**

**Mitchell, J. W.** Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

#### Mixed Convection

Les instabilités hydrodynamiques en convection libre, forcée et mixte (BR) **AM 968**

Mixed Convection on Inclined Surfaces (78-WA/HT-46) **HT 422**

Unsteady Mixed Convection Heat Transfer from a Horizontal Circular Cylinder **HT 126**

#### Mixed Convection Effects

Fluid Temperature and Mixed Convection Effects in Hot-Wire Measurements of Natural Convection Flows (BN) **AM 231**

#### Mixed-Flow Machines

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

#### Mixed Flow Turbines

Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440**; (D) **P 448**; (AC) **P 449**

**Miyagi, K.** Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**

**Miyai, Y.** Trajectories of Single and Double Jets Injected Into a Crossflow of Arbitrary Velocity Distribution **F 217**

**Miyake, Y.** Exact Two-Dimensional Analysis Circular Disk Spiral Groove Bearing (Part I) **L 424**; (Part II) **L 431**

**Mizutani, H.** Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**

#### Mobile Linkage

A Compendium of Line-Symmetric Four-Bars (78-DET-14) **MD 509**

#### Mobility Criteria

Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504**; (D) (AC) **MD 507**

#### Modal Analysis

Marine Riser Vibration Response Determined by Modal Analysis (78-PET-12) **ERT 159**

#### Modal Superposition Method

Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

#### Mode Deflections

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**

#### Mode Shapes

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**

#### Mode Solutions

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**

#### Model Analysis

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

#### Model Stenosis

Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141**; (D) **BE 149**; (AC) **BE 150**

#### Modeling

Calculational Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**

The Investigation of Locomotive Dynamics via A Large Degree of Freedom Modeling **I 397**

Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**

#### Modeling Procedures

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 467**

#### Moderate Deformations

On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**

#### Moderate Rotations

The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

#### Moderate Temperature Geothermal Brines

Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**

#### Modern Control Theory

Optimal Control of Sun Tracking Solar Concentrators **DS 157**

**Modest, M. F.** A Simple Differential Approximation for Radiative Transfer in Non-Gray Gases (TN) **HT 735**

**Moffat, R. J.** The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**

**Mohan, D.** A Biomechanical Analysis of Head Impact Injuries to Children **BE 250**

**Mojtabi, A.** Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) **HT 171**

#### Molecular Viscosity

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**

#### Molybdenum

Materials for Human Implantation **BE 2**

#### Momentum Transfer

Mechanism of Heat and Momentum Transfer of Combined Free and Forced Convection with Opposing Flow (TN) **HT 573**

**Mon, G.** Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers With Positive Feedback (78-WA/DSC-3) (TB) **DS 77**

**Monello, J. A.** Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 282**

#### Monopropellants

Hydrazine Monopropellant Reciprocating Engine Development (78-WA/Aero-12) **I 458**

#### Monotonicity Analysis

Global Non-Interactive Design Optimization Using Monotonicity Analysis (78-WA/DE-17) **MD 645**

**Montakhab, A.** Convective Heat Transfer in Porous Media (78-HT-45) **HT 507**

**Moody, N. R. (author)** An Analysis of Effects of Electromechanical Vibration on Selected Specimens (GR) **MD 175**

**Moon, F. C.** Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**; Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**

**Moore, J. G.** A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow. Part 1—Inviscid Flow Considerations (79-WA/FE-4) **F 415**; Part II—Stagnation Pressure Losses in a Rectangular Elbow (79-WA/FE-5) **F 423**; (D) (AC) **F 428**

**Moore, W. L.** Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (78-DET-66) **MD 373**

#### Mooring System

A Unique Approach to the Offshore Gas Disposal Problem: Castellon SALS Production Facilities **ERT 210**

**Moran, T. J.** Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids **AM 519**

**Morduchow, M.** Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) **AM 505**

**Moré, T.** Experimental Study of a Jet-Driven Helmholtz Oscillator (78-WA/FE-16) **F 383**

**Morgan, H. S.** Buckling of Rectangular Cross-Ply Laminated Plates With Nonlinear Stress-Strain Behavior **AM 637**

**Morgan, K. (editor)** Numerical Methods in Laminar and Turbulent Flows (BR) **AM 967**

**Morrison, F. A., Jr.** Low Peclet Number Heat and Mass Transfer from a Drop in an Electric Field **HT 484**

Small Reynolds Number Electro-Hydrodynamic Flow Around Drops and the Resulting Deformation (79-WA/AM-8) **AM 510**; Stability of Flow From a Nuclear Cavity (79-FE-5) **F 335**

**Morrison, F. R.** A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164**; (D) (AC) **L 170**

**Morse, A. P.** Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**

**Morton, J. B.** Stability of a Rotor Partially Filled With a Viscous Incompressible Fluid (79-WA/AM-28) **AM 513**

**Moses, J. L.** Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**

**Mots, C. D., Jr.** A Feedback Vibration Controller for Circular Saws **DS 44**

#### Motion

Dynamics of a Wobbling Symmetric Disk (BN) **AM 711**

On the Motion of Rectangular Prismatic Bodies (79-FE-3) **F 193**

Sphere on Imperfectly Rough Sloping Plane (BN) **AM 713**

Transient Response of Two Fluid-Coupled Cylindrical Elastic Shells to an Incident Pressure Pulse (79-WA/AM-15) **AM 513**

#### Motion Analysis

Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 181**

Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**

#### Motion Characteristics

Semiusubmersible Rig Motion Studies Offshore of Alaska and Southern California **ERT 182**

#### Motion Classification

Symmetrical Algebraic Motions in the Plane

(78-DET-40) MD 15

**Motion Equations**  
A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) MD 154

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) MD 77

**Motion Generation**  
Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) MD 428

**Motion Generators**  
Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (WA/DE-2) MD 614

**Motion Properties**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) MD 99

**Moulden, T. H. (editor)** Handbook of Turbulence, Volume 1 (BR) AM 237

**Mounting Systems**  
Marine Spray—SM1A Propulsion Module (78-GT-58) P 149

**Moussa, N. A.** Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures BE 213

**Mousseil, A. H.** On Pipeline Bending at the Seabed (TB) ERT 203

**Moving Load**  
A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) AM 175

**Moyer, D. W.** Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) L 171; (D) L 177; (AC) L 178

**Murthyjanyaya, T. S.** Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) MD 488

**Mucoglu, A.** Mixed Convection on Inclined Surfaces (78-WA/HT-46) HT 422

**Mueller, T. J.** Numerical Study of the Steady Axisymmetric Flow Through a Disk-Type Prosthetic Heart Valve in an Aortic-Shaped Chamber BE 198

**Mueller, W. K.** Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures HT 617

**Mukherjee, B.** Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) MT 47

**Mukherjee, S.** Inelastic Bending of Beams Under Time-Varying Moments—A State Variable Approach (79-PVP-82) PVT 305

**Muki, R. (reviewer)** Stress Analysis of Notch Problems (BR) AM 988

**Muleski, G. E.** A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) PVT 44

**Multi-Axial Creep**  
An Investigation of Multi-Axial Creep Characteristics of Metals L 356

**Multi-Edge Cutting Tools**  
Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) MD 281

**Multi-Seam Mining**  
Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) ERT 105

**Multi-Tool Machining Analysis**  
Multi-Tool Machining Analysis—Part 1 Tool Failure Patterns and Implications (78-WA/PROD-24) I 230; Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) I 237

**Multibody Systems**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) DS 58

**Multicriteria Optimization**  
Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) MD 398

**Multiparametric Optimization**  
Multiparametric Optimization of Four-Bar Linkages (78-DET-7) MD 388

**Multipass Welds**  
Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) PVT 149

**Multipasses**  
Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/PROD-11) I 311

**Multiple Driving Pins**  
General Forms of Index Ratios and Generation of Variable

Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) MD 438

**Multiple Hole Extrusion**  
A Study of Multiple Hole Extrusion MT 135

**Multiple Parameter Systems**  
Vibrations and Stability of Multiple Parameter Systems (BR) AM 719

**Multiple Regression Technique**  
Reliability Analysis of Cutting Tools (78-WA/PROD-9) I 185

**Multiplicative Inputs**  
Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs DS 58

**Multipoint Models**  
Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) MD 258

**Multitrow Holes**  
Film Cooling Effectiveness for Injection from Multitrow Holes (78-GT-32) P 101

**Multistage Geared Geneva Mechanism**  
Multistage Geared Geneva Mechanism (78-DET-18) MD 41

**Multivariable Control**  
Experience With Experimental Applications of Multivariable Computer Control DS 108

Optimal Control of Turbine Engines DS 117

**Multivariable Controllers**  
Design of Multivariable Controllers for an Advanced Turbofan Engine by Zakian's Method of Inequalities DS 299

Robust Multivariable Controllers for a Tubular Ammonia Reactor DS 290

**Mulville, D. (editor)** Fracture Mechanics (BR) AM 957

**Municipal Refuse**  
The Relative Value of Energy Derived From Municipal Refuse ERT 251; (D) ERT 255-258; (AC) ERT 258

**Munson, B. R.** Small Reynolds Number Convection in Rotating Spherical Annuli HT 427; Torque Characteristics for Spherical Annulus Flow F 284

**Mura, T.** The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) AM 588; Fracture Related to a Dislocation Distribution (79-WA/AM-26) AM 617

**Murakami, S.** Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression AM 883

**Murakawa, H.** Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) AM 71

**Murata, S.** Exact Two-Dimensional Analysis Circular Disk Spiral Groove Bearing (Part I) L 424; (Part II) L 431

**Murphy, H. D.** Symmetric Sink Flow Between Parallel Plates (Er) F 390

**Murphy, K. E.** The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) PS24

**Myerowitz, P. D.** A Simulation of the Dynamics of Counterpulsation BE 105

## N

**Nachemson, A. L.** Mechanical Properties of Human Lumbar Spine Motion Segments—Part 1: Responses in Flexion, Extension, Lateral Bending, and Torsion BE 46; Part II: Responses in Compression and Shear; Influence of Gross Morphology BE 53

**Nachman, A.** The Propagation of a Crack by a Rigid Wedge in an Infinite Power Law Viscoelastic Body (78-WA/AM-10) AM 605

**Nachtigal, C. L.** Development of a Hydraulic Chambered, Actively Controlled Boring Bar I 382

**Nagano, Y.** Structure of Turbulent Velocity and Temperature Fluctuations in Fully Developed Pipe Flow HT 15

**Nagata, S.** Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) MD 330

**Nagaya, K.** Dynamic Response of a Membrane With Both Curved and Straight Line Boundaries AM 667

**Nagel, D. A.** A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) BE 176; Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) BE 134

**Nagpal, V.** Lubricated Extrusion of "T" Sections from

Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) I 319

**Nahavandi, A. N.** Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) PVT 134

**Naltescu, L.** Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) I 278

**Nair, P. K.** Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-5) MT 53; (D) (AC) MT 58; (Er) MT 153

**Nakagawa, T.** Friction and Wear of Sintered Cast Iron Products L 54

**Nakajima, K.** Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) L 201; (D) L 206; (AC) L 207

**Nakajima, M.** Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/PROD-8) I 250

**Nakamura, I.** Three-Dimensional Structure of a Nominally Planar Turbulent Boundary Layer F 328

**Nakamura, N.** Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) I 128; Reliability Analysis of Cutting Tools (78-WA/PROD-9) I 185

**Nakayama, T.** Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) P 281

**Naphthalene Sublimation**  
Natural Convection in a Ternary Gas Mixture—Application to the Naphthalene Sublimation Technique HT 404

**Narayanan, T. V.** Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) PVT 235; Structural Design of a Superheater for a Central Solar Receiver (78-WA/PVP-1) PVT 2

**Narciso, R. R. Jr.** The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) P 500

**Narkis, Y.** Performance of Spherical Gas Bearings in Axisymmetric Operation (TB) L 240

**Narrow Bands**  
Nonstationary Narrow-Band Response and First-Passage Probability (79-WA/AM-18) AM 919

**Nasberg, R. E.** Performance Characteristics of a Simple Linearized Hot-Wire Anemometer F 381

**Nash, J. M.** Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) I 153

**Naso, V.** Further Contributions to the Study of the Leidenfrost Phenomenon HT 612

**Nasrpoor, F.** Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-6) I 185

**Nath, G.** Finite-Difference Solution of Free Convection Problem with Non-uniform Gravity (TN) HT 745; Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers HT 151

**Natural Convection**  
Correlations for Natural Convection through High L/D Rectangular Cells (TN) HT 741

Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures HT 238

Freezing Controlled by Natural Convection HT 578

The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) HT 648

Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures HT 120

Natural Convection Heat Transfer in Moderate Aspect Ratio Enclosures HT 655

Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity HT 227

Natural Convection in a Multi-Layered Geothermal Reservoir HT 411

Natural Convection in a Ternary Gas Mixture—Application to the Naphthalene Sublimation Technique HT 404

Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) HT 171

A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries HT 233

Open-Loop Thermosyphons with Geological Applications (79-HT-64) HT 677

Strongly Implicit Algorithms for Use in Three-Dimensional Natural Convection Studies (TN) HT 739

Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) HT 249

Techniques for Reducing Thermal Conduction and Natural Convection Heat Losses in Annular Receiver Geometries HT 108



Three-Dimensional Numerical Analysis of Transient Natural Convection in Rectangular Enclosures **HT 114**  
Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 258**

#### Natural Convection Flows

Fluid Temperature and Mixed Convection Effects in Hot-Wire Measurements of Natural Convection Flows (BN) **AM 231**

#### Natural Convection Loops

The Transient and Stability Behavior of a Natural Convection Loop **HT 684**

#### Natural Evaporation

Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**

#### Natural Frequencies

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**

Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-GT-37) **MD 210**

Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**

Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 296**

#### Naval Craft

Marine Spray—SM1A Propulsion Module (78-GT-58) **P 149**

Nasie, K. W. Effect of Cyclic Loading on the Yield Surface **PVT 59**

Needelman, W. M. Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (D) **L 177** (AC) **L 178**

Nelle, D. E. Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**

Nelson, C. D. Griffith Diffusers **F 473**

Nelson, C. W. Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**

Nelson, D. A. Band Radiation within Diffuse-Walled Enclosures—Part I: Exact Solutions for Simple Enclosures **HT 81**; Part II: An Approximate Method Applied to Simple Enclosures **HT 85**; Calculation of Shape Factors between Rings and Inverted Cones Sharing a Common Axis (D) (AC) **HT 189**

Nelson, I. Dynamic Seismic Analysis of Long Segmented Lifelines (78-PVP-4) **PVT 10**

Nelson, R. D. Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice **ERT 196**

Nemat-Nasser, S. Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) **ERT 34**

Nenn, J. P. A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305**; (D) **P 313**; (AC) **P 314**

Nerz, A. R. A Simulation of the Dynamics of Counterpulsation **BE 105**

Neubert, J. Calculation of Mean Temperature Difference in Air-Cooled Cross-Flow Heat Exchangers **HT 511**

#### Neutralization

Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

#### Neutron Activation Analysis

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**

#### Neutron Scattering Technique

Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**

New, R. W. The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

Newmann, M. M. A Technique for Compensating the Filter Performance by a Fictitious Noise (D) (AC) **DS 275**

#### Newtonian Fluids

The Laminar Far Wake Flow of a Non-Newtonian Power-Law Fluid **F 331**

Squeeze Film Damping of Non-Newtonian Fluids **L 518**

#### Newtonian Liquid Sprays

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

Ni, R.-H. A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

#### Nickel-Based Alloys

The Fatigue-Crack Propagation Response of Two Nickel-Based Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 205**

Niethammer, J. E. Natural Convection in a Ternary Gas Mixture—Application to the Naphthalene Sublimation Technique **HT 404**

Nikkanen, J. P. A Fundamental Criterion for the Application of Rotor Casing Treatment **F 237**

Nishi, M. The Computation of Optimum Pressure Recovery in Two-Dimensional Diffusers (D) (AC) **F 403**

Nishikawa, H. Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 705**

Nishitani, A. Time-Domain Structural Response Simulation in a Short-Crested Sea **ERT 270**

Nishiwaki, H. An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**

#### Nitrogen

Viscosity of Nitrogen near the Critical Point (78-WA/HT-38) **HT 3**; (Er) **HT 575**

#### Nitrogen Oxides

The Effects of Diesel Fuel Properties on Performance, Smoke, and Emissions (78-DGP-26) **P 524**

Ng, K. W. The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

Ng, T. T. Experimental Investigation of a Variable Geometry, Radial Ejector (79-WA/FE-8) **F 401**

Nguyen, T. V. Gravity Flow of Granular Materials in Conical Hoppers (79-WA/APM-20) **AM 529**; A Vortex Model of the Carrier Turbine: An Analytical and Experimental Study (79-WA/FE-6) **F 500**

Noble, M. L. Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**

#### Noise

A Technique for Compensating the Filter Performance by a Fictitious Noise (D) (AC) **DS 275**

Velocity Exponent for Erosion and Noise Due to Cavitation **F 69**

#### Noise Generation

Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**

#### Noise Levels

Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) **P 290**

#### Non-gray Gases

A Simple Differential Approximation for Radiative Transfer in Non-Gray Gases (TN) **HT 735**

#### Nonconstant Fields

Harmonic Holes for Nonconstant Fields (79-APM-30) **AM 573**

#### Noncoplanar Point Positions

Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**

#### Nonisothermal Creep

Reference Stress and Temperature for Nonisothermal Creep of Structures **AM 795**

#### Nonlinear Analyses

Nonlinear Analysis of Rail Vehicle Forced Lateral Response and Stability **DS 230**

#### Nonlinear Behavior

The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

#### Nonlinear Compatibility Equations

On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) **MD 47**

#### Nonlinear Differential Equations

Nichtlineare Schwingungen (BR) **AM 238**

#### Nonlinear Equations

Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**

#### Nonlinear Functions

Inversion of a Class of Nonlinear Stress-Strain Relationships of Biological Soft Tissues **BE 23**

#### Nonlinear Pendulum

On the Damped Oscillations of a Weakly Nonlinear Pendulum (BN) **AM 213**

#### Nonlinear Programming

Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**

#### Nonlinear Programming Algorithms

Numerical Investigation of Some Potential Problems of Univariate Minimization Methods **MD 663**

#### Nonlinear Stability Analysis

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31**; (D) **AM 963**; (AC) **AM 964**

#### Nonlinear State Space Equations

Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs **DS 58**

#### Nonlinear Structural Analysis

Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

#### Nonlinear Vibration

Nonlinear Vibration of Rectangular Plates (BN) **AM 215**

#### Nonlinearities

Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) **DS 31**

#### Nonseries Airfoil Design Technology

Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-106) **P 202**

#### Nonuniform Gravity

Finite-Difference Solution of Free Convection Problem with Non-uniform Gravity (TN) **HT 745**

#### Normal High Frequency Oscillations

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency (78-Lub-5) **L 145**; (D) **L 153**

#### Notch Configurations

Energy Variations in Notch Stress Analysis (BN) **AM 952**

#### Notch Problems

Stress Analysis of Notch Problems (BR) **AM 968**

#### Notched Bars

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

Noujaim, R. A. On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**

#### Nozzle Corner

A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) **PVT 181**

#### Nozzle Guide Vanes

The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**

#### Nozzles

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

Effect of Nozzle Shape and Polymer Additives on Water Jet Appearance (77-FE-16) **F 304**

Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**

Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers **HT 151**

Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**

Nakala, N. Y. Development of Method for Determining Emissivities and Absorptivities of Coal Ash Deposits (78-WA/Fu-6) **P 607**

#### Nuclear Cavities

Stability of Flow From a Nuclear Cavity (79-FE-5) **F 335**

#### Nuclear Components

Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation **PVT 276**

#### Nuclear Explosions

Stability of Flow From a Nuclear Cavity (79-FE-5) **F 335**

#### Nuclear Power Plants

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) **P 640**

Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

#### Nuclear Pressure Vessels

Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (78-PVP-62) **PVT 298**

#### Nuclear Reactor Systems

Graphical Solutions for the Characteristic Roots of the First



- Order Linear Differential-Difference Equation (78-WA/DSC-31) **D5 37**
- Nuclear Reactors**  
Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analyses of Nuclear Reactor Vessels (79-PVP-16) **MT 182**  
Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**
- Nucleate Boiling**  
An Analytical Estimate of the Microlayer Thickness in Nucleate Boiling (TN) **HT 180**
- Nucleation**  
Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures **HT 617**
- Nucleation Processes**  
Nucleation Processes in Large Scale Vapor Explosions **HT 280**
- Numerical Accuracy**  
Graphical Solutions for the Characteristics Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **D5 37**
- Numerical Algorithms**  
A Closed-Form Numerical Algorithm for the Elastic Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**  
A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**  
Frontiers of Optimal Design **MD 674**  
On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 206**
- Numerical Analysis**  
A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**  
The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**  
Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231; (D) L 238; (AC) L 239**  
Laminar Transport Phenomena in parallel Channels with a Short Flow Construction **HT 217**  
Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) **P 116**
- Numerical Calculations**  
Inviscid Solution for the Problem of Free Overfall **AM 1**  
Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**
- Numerical Classification Data**  
A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 63**
- Numerical Comparison**  
A State Space Method for Optimal Design of Vibration Isolators **MD 309**
- Numerical Computational Methods**  
An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**
- Numerical Control Machines**  
A Survey of Cam Manufacture Methods (78-DET-65) **MD 455**
- Numerical Evaluation**  
Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23; (D) P 29; (AC) P 30**
- Numerical Examples**  
Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **D5 50**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**  
Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**  
Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 398**  
Multiport Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) **MD 258**  
Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**  
Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**  
Optimization of Power Absorption From Sea Waves **ERT 145**
- Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20**; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 26**  
Resonant Excitation of a Spinning, Nutating Plate **AM 132**  
On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**
- Numerical Methods**  
A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**  
Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**  
Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**  
Numerical Methods in Laminar and Turbulent Flows (BR) **AM 967**  
The Numerical Treatment of Integral Equations (BR) **AM 968**  
Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**  
A Study of Cold Strip Rolling **MT 129**
- Numerical Model**  
National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**  
Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**
- Numerical Optimization**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**
- Numerical Procedures**  
Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**  
Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**  
Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) **L 92**  
Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) **ERT 105**
- Numerical Results**  
Amplitude-Frequency Characteristics of Large-Amplitude Vibrations of Sandwich Plates (BN) **AM 230**  
Analysis of Misalignment in the Tension Test **MT 68**  
Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**  
On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) **MD 47**  
Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304**  
Diffraction of SH-Waves by an Edge Crack **AM 101**  
Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190; (D) L 198; (AC) L 200**  
Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**  
Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity **HT 227**  
The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**  
Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31**  
Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells  
Time-Domain Structural Response Simulation in a Short-Crested Sea **ERT 270**
- Numerical Simulations**  
Numerical Simulation of Particulate Motion in Turbulent Gas-Solid Channel Flow (78-WA/FE-37) **F 319**
- Numerical Solutions**  
Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) **PVT 226**  
The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) **L 105**  
Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**  
Numerical Solution of a Flow due to Natural Convection in Horizontal Cylindrical Annulus (TB) **HT 171**  
Numerical Solutions of Nonsteady Two-Dimensional Transonic Flows **F 341**
- Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 86**  
Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**  
Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**  
The Problem of an inclined Crack in an Orthotropic Strip **AM 90**  
Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**
- Numerical Study**  
A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**  
A Study of Penetrative Convection in Rotating Fluid **HT 261**
- Numerical Technique**  
Two Dimensional Lateral Flow Past a Barrier (79-WA/FE-14) **F 449**
- Nuspi, S. P.** An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts (78-WA/PTC-1) **P 655**
- Nusselt Numbers**  
Average Nusselt Numbers for External Flows (TN) **HT 734**  
The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**
- Nutating Plate**  
Resonant Excitation of a Spinning, Nutating Plate **AM 132**
- Nutkins, M. S.** Erosion-Corrosion Effects on Boiler Tube Metals in a Multisols Fluidized-Bed Coal Combustor (D) **P 7; (AC) P 8**
- Nylons**  
Materials for Human Implantation **BE 2**
- Nypan, L. J.** Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180; (D) (AC) L 188**
- O**
- Oberkampff, W. L.** A New Formulation for Computational Fluid Dynamics **F 453**
- Obermeier, J. L.** An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (76-WA/Ener-1) **P 213**
- Obert, E. F.** Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) **I 427**
- Observation Wells**  
Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 20**
- Observer Design**  
Observer Design for the Minimum-Time State Reconstruction of Linear Discrete-Time Systems **D5 350**
- Ocean Engineering**  
History of Ocean Engineering Division of ASME **ERT 154**
- Ocean Prospector**  
Semisubmersible Rig Motion Studies Offshore of Alaska and Southern California **ERT 182**
- Ocean Surfaces Waves**  
Power Extraction From Ocean Surfaces Waves **ERT 141**
- Ocean Thermal Differences Power Plant**  
Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**
- Ocean Thermal Energy Conversion**  
Capital Cost System Optimization of OTEC Power Modules **ERT 74**  
Ocean Thermal Energy Conversion (BR) **ERT 206**
- Ocean Waves**  
Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**  
Time-Domain Structural Response Simulation in a Short-Crested Sea **ERT 270**
- Ocular Tonometry**  
Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**
- Oegerli, R.** Gas Turbine Commissioning Procedure (78-GT-54) **P 125**
- Offshore Gas Disposal Problem**  
A Unique Approach to the Offshore Gas Disposal Problem: Castellon SALS Production Facilities **ERT 210**
- Offshore Research Platform**  
Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

## Offshore Structures

Fatigue Analysis of Offshore Structures **ERT 218**

## Offshore Technology

Semiburied Rigid Motion Studies Offshore of Alaska and Southern California **ERT 182**

## Offshore Tower

Time Domain Structural Response Simulation in a Short-Crested Sea **ERT 278**

## OFMC Copper

Application of Damage Concepts to Predict Creep-Fatigue Failures (78-PVP-25) **MT 284**

**Oh, S. I.** Ductile Fracture in Axisymmetric Extrusion and Drawing—Part I: Deformation Mechanics of Extrusion and (78-Prod-A) **I 23**; Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 36**

**Ohlani, R.** Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**; Part II—Fatigue Crack Propagation **MT 162**; Effects of Nonlinear Stress-Strain Rate Relation on Deformation and Fracture of Materials in Creep Range **MT 369**

## Oil Content

Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 99**

## Oil Films

An Analytical Study of Starved Porous Bearings **L 38**  
Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 180**; (D) **L 186**; (AC) **L 290**

## Oil Flowrate

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) **L 154**; (D) **L 161**; (AC) **L 162**

## Oil Lubrication

Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**

## Oil-in-Water Emulsions

Transport of Oils as Oil-in-Water Emulsions (77-FE-26) **F 180**

## Oil/Water Separation

A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAS-26) **I 441**

## Oils

Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

Measurement of Energy Resources **DS 16**

**Okishita, T. H.** Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**

**Olessey, R. A.** Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

## On-Site Performance Measurements

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

## One-Dimensional Freezing System

The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**

## One-Dimensional Minimization

A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**

**O'Neill, D. A.** A Unique Approach to the Offshore Gas Disposal Problem: Castellan SALS Production Facilities **ERT 216**

**One, K.** Lateral Motion of an Axially Moving String on a Cylindrical Guide Surface **AM 905**

## Open Holes

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

## Open Loop Dynamic Systems

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 487**

## Open-Loop Thermosyphons

Open-Loop Thermosyphons with Geological Applications (79-HT-64) **HT 677**

## Operating Reliability

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

## Operating Speeds

Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 210**

## Operational Experience

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397**; (D) **P 404**

## Operational Systems

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

## Optical Analysis

Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 99**

## Optical Measurement

On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**

## Optical Scanner

Measurement of Fiber Diameter and Diameter Distribution by Image Analysis (78-Tex-9) **I 54**

## Optical Velocimeters

Laminar Fluid Flow Measurements Employing a White Light Friction Image Velocimeter (WVIF) (BN) **AM 218**

## Optimal Conditions

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**

## Optimal Control

About This Special Issue **DS 89**  
Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) **DS 162**

Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) **DS 99**  
Some Connections Between Modern and Classical Control Concepts **DS 91**

Experience With Experimental Applications of Multivariable Computer Control **DS 108**

Optimal Control Concepts for the Characterization and Design of Highway Vehicle - Trailer Systems (78-WA/DSC-27) **DS 127**

Optimal Control of Sun Tracking Solar Concentrators **DS 157**

Optimal Control of Turbine Engines **DS 117**  
On the Optimal Digital State Vector Feedback Controller With Integral and Preview Actions **DS 172**

An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) **DS 138**

Time Optimum Control of a Two Capacity Thermal Environmental System With Louvers **DS 150**

## Optimal Design

Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

A State Space Method for Optimal Design of Vibration Isolators **MD 306**

## Optimal Diffusers

Inverse Design of Optimal Diffusers With Experimental Corroboration (79-WA/FE-15) **F 478**

## Optimal Group Scheduling

Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**

## Optimal Programming

Optimal Programming of Working Cycles for Industrial Robots **MD 250**

## Optimal Strategy

Multi-Tool Machining Analysis—Part I Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**

## Optimization

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**

Capital Cost System Optimization of OTEC Power Modules **ERT 74**

A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) **MD 349**

Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 398**

A Generalized Procedure for the Design and Optimization of Fluted Gregor Condensing Surfaces **HT 335**

The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**

Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**

Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 386**

Optimization of Crank-and-Rocker LINKAGES WITH Size and Transmission Constraints (78-DET-6) **MD 51**

Optimization of Power Absorption From Sea Waves **ERT 145**

Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 246**

A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

Optimization Analysis  
The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

Optimization Methods  
Frontiers of Optimal Design **MD 674**

Optimization Procedure  
An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**

Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Optimization Study  
Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9**

Optimization Techniques  
Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) **MD 650**

Global Non-Iterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) **MD 645**

Optimizing Storage Capacities  
Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **I 223**

Optimum Airtoll Design  
Application of Nonseries Airtoll Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

Optimum Configuration  
Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

Optimum Design  
A Method of Optimum Design **MD 667**

Optimum Efficiency  
An Investigation of Regenerative Blowers and Pumps (78-WA/PD-2) **I 147**

Optimum Linear Tapering  
Optimum Linear Tapering in the Design of Columns (BN) **AM 958**

Optimum Performance  
A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305**; (D) **P 313**; (AC) **P 314**

Optimum Synthesis  
Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380**; (D) (AC) **MD 385**

**Oranratnachal, A.** Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) **ERT 34**

**O'Reilly, J.** Observer Design for the Minimum-Time State Reconstruction of Linear Discrete-Time Systems **DS 350**

Organ Transplantation  
The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**

Orifice-Compensated Journal Bearing  
An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**

Orifice Equations  
The Stolz and ASME-AGA Orifice Equations Compared to Laboratory Data (78-WA/FM-2) **F 483**

Orifice Flow  
Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141**; (D) **BE 149**; (AC) **BE 150**

**Orlandi, P.** Two-Dimensional Laminar Flow in Elbows **F 276**

Orthorhombic Symmetry  
Yield Surface Characteristics Arising From Orthorhombic Symmetry (BN) **AM 961**

Orthotropic Cylindrical Shells  
Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**

## Orthotropic Strip

The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

Orthwein, W. C. A New Key and Keyway Design (78-WA/DE-7) **MD 338**

Osaka, H. Three-Dimensional Structure of a Nominally Planar Turbulent Boundary Layer **F 326**

## Oscillating Airfoils

Drag on an Oscillating Airfoil in a Fluctuating Free Stream **F 391**

## Oscillating Cascades

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

## Oscillating Forces

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129; (D) L 137; (AC) L 138**

## Oscillating Singularities

A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**

## Oscillations

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145; (D) L 152; (AC) L 153**

On the Damped Oscillations of a Weakly Nonlinear Pendulum (BN) **AM 213**

Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) **AM 672**

Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids **AM 519**

Thickness Oscillations in Deformed Elastic Plates **AM 663**

## Oscillators

Experimental Study of a Jet-Driven Helmholtz Oscillator (78-WA/FE-16) **F 383**

## Oscillatory Flow

Linearization Equations for Vibration Induced by Oscillatory Flow (BN) **AM 946**

Osman, M. O. M. Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108**; Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

## Osteoarthritis

Determining the In-Vivo Areas of Contact in the Canine Shoulder **BE 271**

Ostergren, W. J. Creep Failure Criteria for High Temperature Alloys **MT 374**; A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

Ostrach, S. Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**; Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**; Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 61**

Ota, T. Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**

Ottis, D. R. Experimental Investigation of a Variable Geometry, Radial Ejector (79-WA/FE-8) **F 491**

## Overhanging Endmass

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 89**

## Overlay Coatings

Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**

Overmyer, K. M. Measurements of Temperature Distributions at Electro-Surgical Dispersive Electrode Sites **BE 66**

## Oxidation Resistance

Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**

## Oxygenated Water

Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) **MT 191**

Ozizik, M. M. Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**; An Iterative Solution for Anisotropic Radiative Transfer in a Slab **HT 695**; Transient Freezing of Liquids in Turbulent Flow Inside Tubes **HT 485**

## P

Pack, C. R. Marine Spray—SM1A Propulsion Module (78-GT-58) **P 149**

## Package Design

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**

Padmanabhan, M. Pressure Pulse Propagation in Two-Component Slug Flow **F 44**

Page, K. G. Marine Spray—SM1A Propulsion Module (78-GT-58) **P 149**

Page, R. H. Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) **F 230; (D) F 235; (AC) F 236**

Pal, S. C. Seizure Resistance of Cast Aluminum Alloys Containing Dispersed Graphite Particles of Different Sizes **L 376**

Paldoussis, M. P. Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**; Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**; Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (D) **AM 963; (AC) AM 964**

## Paint

Drop-Size Distributions of Bingham Liquid (PAINT) Sprays Produced by Fan-Jet Pressure Nozzles **I 449**

Pamid, P. R. On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**

Pampreen, R. Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**; Free Shear Layer Behavior in Rotating Systems (D) (AC) **F 120**

Pan, C. H. T. Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (D) **L 423**; Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (D) (AC) **L 138**

Pan, R. B. Effects of Strain Hardening on Rock/Bit-Tooth Interaction (77-Pet-70) **ERT 53**

Pan, Y.-C. Green's Functions for Two-Phase Transversely Isotropic Materials **AM 551**

Pande, P. K. Subsonic Turbulent Flow Past a Planar Fence **F 373**

Pandey, P. C. Failure of Cemented Carbide Tools When Executing Intermittent Cuts (78-WA/Prod-17) **I 391**

Panek, C. Thermoelastic Contact Between Bodies With Wavy Surfaces (79-WA/APM-35) **AM 854**

## Panel Stiffness

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

Panton, R. L. Peristaltic Pumping by a Lateral Bending Wave **BE 239**

Papageorgiou, N. Water Production from Exhaust Gases of Steam Power Plants (TB) **P 677**

Papailiou, K. D. An Axial Compressor-End-Wall Boundary Layer Calculation Method (D) **P 245; (AC) P 248**; An Integral Method for Calculating Turbulent Boundary Layer With Separation **F 110**

Papalambros, P. Global Non-Iterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) **MD 645**

## Parabolic Reflectors

Analysis of Diffuse-Specular Axisymmetric Surfaces with Application to Parabolic Reflectors (79-HT-22) **HT 689**

## Parallel Channels

Laminar Transport Phenomena in parallel Channels with a Short Flow Construction **HT 217**

## Parallel Manufacturing Systems

Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/PROD-8) **I 250**

## Parallel Plates

Symmetric Sink Flow Between Parallel Plates (Er) **F 390**

## Parallel Rods

Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods **F 429; (D) F 434; (AC) F 435**

## Parallel Shafts

Displacement Analysis of Spatial 7R Mechanisms Suitable for Constant-Velocity Transmission Between Parallel Shafts (78-DET-9) **MD 604**

## Parameter Deviations

The Horizontal Plate Filter as a Torsional Vibration System

With Vibration Absorption (77-DET-86) **MD 163**

## Parameter Optimization

Parameter Optimization for Two-Player Zero-Sum Differential Games **DS 345**

## Parameter Range

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

## Parameter Variation

Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**

## Parametric Amplifier

Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**

## Parametric Excitation

Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) **MD 840**

## Parametric Methods

Developments in Parametric Methods for Handling Creep and Creep-Rupture Data **MT 326**

Parthar, K. S. The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) **AM 577**

Parker, D. F. The Role of Saint Venant's Solutions in Rod and Beam Theories **AM 861**

Parkins, D. W. Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129; (D) L 137; (AC) L 138**

Parks, D. M. An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**; Energy Variations in Notch Stress Analysis (BN) **AM 952**

Parriah, T. F., Jr. Optimal Fin-Size Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**

## Part-Circular Cracks

Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) **PVT 270**

## Part-Elliptical Cracks

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

## Part-Span Dampers

A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**

## Part-Through Flaws

Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53; (D) (AC) MT 58**

## Part-Through Thickness Defects

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

## Partial Arc Bearing

A Parametric Study of Journal Bearing Performance: The 80 Deg Partial Arc Bearing **L 486**

## Particle-Fluid Mixture

Lubrication Flow of a Particle-Fluid Mixture (BN) **AM 211**

## Particle-Size Profiles

Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 705**

## Particle Velocity

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

## Particulate Motion

Numerical Simulation of Particulate Motion in Turbulent Gas-Solid Channel Flow (78-WA/FE-37) **F 319**

Partom, Y. Uniaxial Cyclic Loading of Elastic-Viscoplastic Materials (79-WA/APM-30) **AM 805**

Passerello, C. On the Dynamics of a Weighted Bowling Ball (79-WA/APM-17) **AM 937**

Patadia, S. The Investigation of Locomotive Dynamics via A Large Degree of Freedom Modeling **I 397**

Patankar, S. V. Analysis of Turbulent Flow and Heat Transfer in Internally Finned Tubes and Annuli **HT 29**; Condensation on an Extended Surface **HT 434**

Patel, V. Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**

## Path-Angle Generation

Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**

Palit, H. Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220; (D) L 229; (AC) L 230**

Palnalk, L. M. Robust Multivariable Controllers for a Tubular Ammonia Reactor **DS 290**

Palia, E. J. The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/PROD-18) **I 269**

Palwardhan, A. G. Technology Transfer in Biokinematics



- of the Human Spine (78-DET-88) **MD 504**
- Paul, B.** A Reassessment of Grashof's Criterion (TB) **MD 515; (author)** A Review of Rail-Wheel Contact Stress Problem (GR) **MD 175**
- Paul, P. H.** Radiative Transfer in Hartmann MHD Flow (78-HT-18) **HT 502**
- Pearce, J. A.** Measurements of Temperature Distributions at Electro-Surgical Dispersive Electrode Sites **BE 66**
- Pearson, S. W.** Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **JERT 225**
- Passe, C. B.** Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**
- Pecell, G.** On a Class of Modes Defined by Rosenberg (BN) **AM 703**
- Pellets**  
Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) **MD 650**
- Pemberton, J. C.** An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (78-Lub-27) **L 327; (D) (C) L 337**
- Penetration Depth**  
Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212; (D) (AC) L 218**
- Penetration Patterns**  
Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) **PVT 210**
- Penetrative Convection**  
A Study of Penetrative Convection in Rotating Fluid **HT 261**
- Pepper, D. W.** Strongly Implicit Algorithms for Use in Three-Dimensional Natural Convection Studies (TN) **HT 739**
- Perforated Plates**  
Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) **PVT 210**
- Performance Analysis**  
The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 162**
- Performance Characteristics**  
An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing **L 28**  
A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384; (D) P 392-394; (AC) P 395**
- Performance Comparison**  
A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**
- Performance Criteria**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) MD 26**
- Performance Curves**  
Reasons for Centrifugal Compressors Surging and Surge Control (78-GT-26) **P 79**
- Performance Evaluation**  
Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**
- Performance Measurements**  
An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**  
Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**  
Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**
- Performance Reliability**  
Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**
- Performance Specification**  
Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440; (D) P 448; (AC) P 448**
- Performance Test Codes**  
Engineering Statistics—with Particular Reference to Performance Test Code Work (78-WA/PTC-2) **P 662**
- Perfused Media**  
Transient Temperature Distributions in an Infinite, Perfused Medium due to a Time-Dependent, Spherical Heat Source **BE 82**
- Perfused Tissue**  
Blood Perfusion Measurements by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 58**
- Periodic Boundary Conditions**  
Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**
- Periodic Elastic Media**  
Elastic Dispersion, Homogeneous Dispersive Media and an Application to Periodic Elastic Media (D) (AC) **AM 236**
- Periodic Flow Perturbation**  
A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**
- Periodic Forcing Function**  
A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**
- Periodic Function**  
Low Frequency Bloch Waves for Wave Equations Whose Speed is a Deterministic or Randomlike, Periodic Function (D) (AC) **AM 235**
- Periodic Response**  
A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**
- Periodic Structures**  
Excitation of Rotationally Periodic Structure (79-WA/APM-34) **AM 878**
- Periodically Interrupted Surface**  
Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface **HT 211**
- Peristaltic Pumping**  
Peristaltic Pumping by a Lateral Bending Wave **BE 239**
- Pernafrost**  
Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **JERT 225**
- Pernafrost Behavior**  
The Surface Heat Balance in Simulations of Pernafrost Behavior (75-WA/HT-86) **ERT 240**
- Permeability**  
Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) **ERT 112**
- Permeability Enhancement**  
Calculational Modeling of Explosive Fracture and Permeability Enhancement **ERT 28**
- Pereira, N. D.** Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**
- Perrons, N. (editor)** Fracture Mechanics (BR) **AM 967; Simplified Method to Account for Plastic Rate Sensitivity With Large Deformations (79-WA/APM-27) AM 811**
- Perturbation**  
Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**  
Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**  
Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**  
Nichtlineare Schwingungen (BR) **AM 238**  
A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**  
A Thermohydrodynamic Analysis of Journal Bearings **L 21**
- Perturbation Expansion**  
Low Peclet Number Heat and Mass Transfer from a Drop in an Electric Field **HT 484**
- Perturbation Force**  
Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**
- Perturbation Method**  
The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 328**
- Perturbation Solutions**  
Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 158; (D) (AC) AM 963**  
Perturbation Solutions to Phase Change Problem Subject to Convection and Radiation (77-WA/HT-16) **HT 96**
- Peskin, R. L.** Numerical Simulation of Particulate Motion in Turbulent Gas-Solid Channel Flow (76-WA/FE-37) **F 319**
- Petroleum**  
Measurement of Energy Resources **D5 16**
- Pettigrew, M. J.** Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**
- Plund, P. A.** An Experimental Study of the Flow-Induced Motions of a Flexible Cylinder in Axial Flow (D) (AC) **F 294**
- Phase Angles**  
Multistage Geared Geneva Mechanism (78-DET-18) **MD 41**
- Phase-Change Fronts**  
The Propagation of Boiling Boundary Phase-Change Fronts in Moving Fluids (78-WA/FE-18) **F 270**
- Phase Changes**  
A New Similarity Method for Analysis of Multi-Dimensional Solidification **HT 585**  
Perturbation Solutions to Phase Change Problem Subject to Convection and Radiation (77-WA/HT-16) **HT 96**
- Phase Distribution**  
Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**
- Phase Relationships**  
A Note on the Phase Relationships Involved in the Whirling Instability in Tube Arrays (D) **F 530**
- Phelan, J. J.** A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) **P 670**
- Phenomenology**  
Combining Phenomenology and Physics in Describing the High Temperature Mechanical Behavior of Crystalline Solids **MT 367**
- Phillips, C. A.** Contractile Filament Stress in the Left Ventricle and its Relationship to Wall Stress **BE 225**
- Phillips, K.** Aspects of Job Scheduling (78-PEM-A) **I 117**
- Phillips, W. M.** The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**
- Phosphorus**  
Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) **L 201; (D) L 206; (AC) L 207**
- Photoelastic Analysis**  
A New Key and Keyway Design (78-WA/DE-7) **MD 338**
- Photographic Technique**  
Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**
- Physical System Model**  
On the Order of a Physical System Model (F) **D5 185**
- Physics**  
Combining Phenomenology and Physics in Describing the High Temperature Mechanical Behavior of Crystalline Solids **MT 367**
- Physics Laboratory**  
Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**
- Picou, J. L.** Part-Circular Cracks at Various Openings Under Complex Loading Conditions (79-PVP-61) **PVT 270**
- Pierce, F. J.** Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) **F 251**
- Pierce, G. A.** Drag on an Oscillating Airfoil in a Fluctuating Free Stream **F 391**
- Pierre, B.** An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**
- Piezoviscous Lubricant**  
Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190; (D) L 198; (AC) L 200**
- Pilekey, W. D.** Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 304; (editor)** Fracture Mechanics (BR) **AM 967; Transient Response of Continuous Viscoelastic Structural Members AM 885**
- Pilot Plant**  
Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**
- Pilot-Scale Combustion**  
Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615; (D) (AC) P 619**
- Pimbley, W. T.** Fillet Size in a Liquid Jet (79-FE-1) **F 105; (D) F 108**
- Pimenta, M. M.** The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**
- Pinalre, R.** Transport of Oils as Oil-in-Water Emulsions (77-FE-26) **F 100**
- Pinchak, A. C.** Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 81**



- Pindera, J. T.** Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**
- Pinkus, O.** Adiabatic Solutions for Finite Journal Bearings **L 503**
- Pinnas, E. L.** Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures **HT 617**
- Pipe Flow**  
The Effect of Gaseous Cavitation on Fluid Transients **F 79**  
Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube **HT 23**  
Structure of Turbulent Velocity and Temperature Fluctuations in Fully Developed Pipe Flow **HT 15**
- Pipe Inlet Installations**  
Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) **P 572**
- Pipeline Applications**  
An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**
- Pipeline Bending**  
A Note on the Gross Correction for Noncircular Inelastic Pipe Bends Under In-Plane Bending (TB) **PVT 102**  
On Pipeline Bending at the Seabed (TB) **ERT 203**
- Pipeline Construction**  
Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) **ERT 128**
- Pipeline Damages**  
Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) **PVT 21**
- Pipelines**  
An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**  
Decompression of Gas Pipelines During Longitudinal Ductile Fractures (78-Pet-69) **ERT 66**  
Measurement of the Auroral-Induced Current in the Trans-Alaska Pipeline **ERT 156**  
Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **ERT 225**
- Pipes**  
Calculation of Variable Property Turbulent Friction and Heat Transfer in Rough Pipes **HT 469**  
Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**  
Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53; (D) (AC) MT 58; (E) MT 153**  
Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow **F 206; (D) F 206; (AC) F 207**  
Flow Through Successive Enlargement, Turning, and Contraction—Pressure and Fluid Flow Characteristics (TN) **HT 554**  
Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 76**  
Molecular Gas Radiation in the Thermal Entrance Region of a Duct **HT 489**  
A Numerical Study of the Laminar Viscous Incompressible Flow Through a Pipe Orifice (D) **F 299; (AC) F 290**  
A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **PVT 44**  
Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) **F 230; (D) F 235; (AC) F 236**  
Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**
- Piping**  
Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) **I 427**  
Fatigue Crack Growth of Stainless Steel Piping in a Pressurized Water Reactor Environment **PVT 73**
- Piping Systems**  
Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**  
Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) **PVT 149**  
Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**  
Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**
- Pippard, A. B. (author)** The Physics of Vibration: Part 1—The Simple Classical Vibrator (BR) **AM 906**
- Pirvics, J.** Dynamics of Rolling-Element Bearings—Part 1: Cylindrical Roller Bearing Analysis (D)(AC) **L 303; A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) L 164; (D) (A) L 170**
- Pistons**  
Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**
- Pittinato, G. F.** A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 80**
- Pitts, W. H., III** Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**
- Pizzati, R. L.** A Dynamic, Nonlinear Finite-Element Model of a Human Leg (78-WA/Bio-2) **BE 176; Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) BE 134**
- Pizzo, P. P.** Rate Equations for Elevated Temperature Creep **MT 396** Some Observations Regarding the Statistical Determination of Stress Rupture Regression Lines **PVT 286**
- Planar Aerodynamics**  
Airfoil Design in Subcritical and Supercritical Flows **AM 761**
- Planar Fence**  
Subsonic Turbulent Flow Past a Planar Fence **F 373**
- Planar Hydrostatic Foil Bearing**  
Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 86**
- Planar Kinematic Synthesis**  
Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**
- Planar Mechanism Systems**  
Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**  
Determination of the Critical Operating Speeds of Planar Mechanisms by the Finite Element Method Using Planar Actual Line Elements and Lumped Mass Systems (78-DET-37) **MD 216**
- Planar Mechanisms**  
Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) **MD 417**
- Planar Motions**  
Symmetrical Algebraic Motions in the Plane (78-DET-40) **MD 15**
- Plane Angles**  
On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**
- Plane Crank-and-Rocker Linkages**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20**
- Plane Elasticity**  
A Hybrid Problem in Plane Elasticity (BN) **AM 714**
- Plane Linkages**  
Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**
- Plane Motion**  
Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 158**
- Plane Strain**  
Consolidation in Transversely Isotropic Solids **AM 65**  
Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results **AM 113**  
Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**
- Plane Strain Compression**  
Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**
- Plane Strain Deformation**  
Uniqueness of Plane Strain Deformation of Rigid-Plastic Solids Under Lateral Pressure (BN) **AM 959**
- Plane-Strain Plasticity**  
A Finite-Element Model for Plane-Strain Plasticity (79-WA/APM-19) **AM 536**
- Plane Stress**  
Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) **AM 71**  
The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**
- Plane Symmetric Expansion**  
Turbulent Flow Over a Plane Symmetric Sudden Expansion (D)(AC) **F 532**
- Planes**  
Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**
- Planetary Gear System**  
Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**
- Planetary Gear Train**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**
- Plant Designs**  
Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **I 223**
- Plastic Buckling**  
Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**
- Plastic Collapse**  
Plastic Collapse and the Controlling Failure Pressures of Thin 2:1 Ellipsoidal Shells Subjected to Internal Pressure **PVT 64**  
Plastic Collapse of Thin Internally Pressurized Torispherical Shells **PVT 311**
- Plastic Deformation**  
Flow Stress Model in Metal Cutting (78-WA/Prod-27) **I 403; (D) (AC) I 415**
- Plastic Deformation Mechanism**  
The Strain-Rate and Temperature Dependence of 18Ni (350) Maraging Steel Tensile Properties **MT 91**
- Plastic Flow**  
Fracture Related to a Dislocation Distribution (79-WA/APM-26) **AM 817**  
Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate **MT 248**  
Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**
- Plastic Flow Behavior**  
A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**
- Plastic Instability**  
The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 224**
- Plastic Pellets**  
Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) **MD 550**
- Plastic Shear Zone**  
The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**
- Plastic Strain Range**  
Analysis of Misalignment in the Tension Test **MT 68**
- Plastic Structures**  
Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**
- Plastic Zones**  
50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A grain-Size Effect **MT 85**  
A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 80**
- Plasticity**  
Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**  
A Study of Cold Strip Rolling **MT 129**  
A Tabular Summary of Some Experiments in Dynamic Plasticity **MT 231**  
Verification of Specimens for Low-Cycle Fatigue and Cyclic Plasticity Testing **PVT 321**
- Plasticity Analysis**  
Effects of Strain Hardening on Rock/Bit-Tooth Interaction (77-Pet-70) **ERT 53**
- Plastics**  
Creep of Metals and Plastics Under Combined Stresses, A Review **MT 365**  
An Interpolation Scheme for Plastic Yield Criteria (BN) **AM 791**  
A Simplified Method to Account for Plastic Rate Sensitivity With Large Deformations (79-WA/APM-27) **AM 811**
- Plate Filter**  
The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**
- Plate Separators**  
A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAS-26) **I 441**

## Plate Specimens

Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**

## Plate Steels

Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**

## Plate Weldments

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-B-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

## Platelists

Isotropic Properties of Platelet-Reinforced Media **MT 299**

## Plates

Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/APM-25) **AM 895**

Amplitude-Frequency Characteristics of Large-Amplitude Vibrations of Sandwich Plates (BN) **AM 230**

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 138**

Buckling of Rectangular Cross-ply Laminated Plates With Nonlinear Stress-Strain Behavior **AM 637**

Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability **HT 222**

Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**

Effects of Mass Transfer and Free-Convection Currents on the Flow Past and Impulsively Started Vertical Plate **AM 757**

Elasticity Theory of Plates and a Refined Theory **AM 644**

Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) **PVT 210**

The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/APM-16) **AM 618**

Eigenfrequencies of Continuous Plates With Arbitrary Number of Equal Spans **AM 656**

Exact Equations for the Inextensional Deformation of Cantilevered Plates (79-WA/APM-11) **AM 631**

Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-9) **MT 53; (D) (AC) MT 58; (Er) MT 153**

Finite Element Analysis of Mindlin Plates (78-WA/DE-6) **MD 619**

Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel **AM 21**

Hydrodynamic Flow Over a Conducting Thick Porous Plate With Hall Effects (BN) **AM 220**

Local Flexibility Coefficients for the Built-in Ends of Beams and Plates Including the Effects of Foundation Fillet Radii (79-PVP-4) **PVT 249**

Local Nonlinearity Solution of Free Convection Flow and Heat Transfer from an Inclined Isothermal Plate **HT 642**

Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface **HT 211**

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**

Nonlinear Vibration of Rectangular Plates (BN) **AM 215**

Optimum Hole Shapes in Finite Plates Under Uniaxial Load (DDM) **AM 681**

Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**

Resonant Excitation of a Spinning, Nutating Plate **AM 132**

Thickness Oscillations in Deformed Elastic Plate **AM 663**

Thin Disk On a Convectively Cooled Plate—Application to Heat Flux Measurement Errors **HT 346**

Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**

Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) **PVT 207**

Transient Response of Continuous Viscoelastic Structural Members **AM 685**

Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 258**

Waves From Suddenly Punched Hole in Plate Subjected to Uniaxial Tension Field (79-WA/APM-32) **AM 873**

Platten, J. K. (editor) Les instabilités hydrodynamiques en convection libre, forcée et mixte (BR) **AM 968**

Platzner, M. F. Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) **P 533**

Plaut, R. H. (reviewer) Vibrations and Stability of Multiple

Parameter Systems **AM 719**

## Pneum Inlet Installations

Generalized Fluid Meter Discharge Coefficient Based Solely on Boundary Layer Parameters (78-WA/FM-1) **P 572**

Plessat, M. S. An Analytical Estimate of the Microlayer Thickness in Nucleate Boiling (TN) **HT 180**, Effect of Solid Properties and Contact Angle in Dropwise Condensation and Evaporation **HT 48**

Pletcher, R. H. Prediction of Incompressible Separated Boundary Layers Including Viscous-Inviscid Interaction **F 466**

Plesiglass Arterial Stenosis Models

Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141; (D) BE 149; (AC) BE 150**

## Plotting Schemes

A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) **MD 349**

## Plug Flow

Plug Flow of Bulk Solids Using Gas Pressure Control **1 85**

## Plumes

Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**

Plumtree, A. Application of Damage Concepts to Predict Creep-Fatigue Failures (78-PVP-26) **MT 284**

## Pneumatic Instability

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

## Pneumatic Systems

Dust-Traffic Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) **1 197**

Pogosian, A. K. Wear and Thermal Processes in Asbestos-Reinforced Friction Materials **L 481**

Pohio, H. A. Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 165**

## Point Positions

Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**

## Point Sets

Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**

Polani, J. R. Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

## Polarized Waves

Reflection and Transmission of Circularly Polarized Elastic Waves of Finite Amplitude (79-WA/APM-31) **AM 867**

## Pollutant Emissions

Alternative Aircraft Fuels (78-GT-59) **P 155**

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

## Pollutant Levels

Influences on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) **P 186**

## Polycrystalline Aluminas

Materials for Human Implantation **BE 2**

## Polyethylene

Materials for Human Implantation **BE 2**

## Polymer Additives

Effect of Nozzle Shape and Polymer Additives on Water Jet Appearance (77-FE-16) **F 304**

## Polymer Ejection

Effects of Additive Ejection on Lifting Hydrofoils (D) (AC) **F 404**

## Polymer Solutions

Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall **F 121**

## Polymers (Plastics)

Materials for Human Implantation **BE 2**

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212; (D) (AC) L 218**

## Polymorphous Materials

The Stefan Problem of a Polymorphous Material (79-WA/APM-29) **AM 789**

## Polynomials

An Alternative to Euclid's Algorithm (78-DET-41) **MD 582; (D) MD 586**

A Contour Plotting Scheme for Design Optimization (78-WA/DE-13) **MD 349**

## Polyphenyl Ether Fluid

Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**

Ponder, W. H. Sulphur Neutralization by Lignite Ash:

Pilot-Scale Combustion Experiments (D) (AC) **P 619**

Ponter, A. R. S. The Development of High Temperature Design Methods Based on Reference Stresses and Bounding Theorems **MT 349**

Poon, K. C. Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**; Three-Dimensional, Steady-State Heat Conduction in Cylinders of General Anisotropic-Media **HT 548**

Pope, S. B. A Numerical Study of the Laminar Viscous Incompressible Flow Through a Pipe Orifice (D) **F 289; (AC) F 290**

Popal, A. S. Shielding of Heat Transfer from a Boundary (TN) **HT 580**

Popp, S. Compressibility Effects in Cavity Flows **F 53**

Porsh, M. On the Motion of Rectangular Prismatic Bodies (79-FE-3) **F 193**

## Poro-Elastic Media

Twisted-Pore Effect on Fluid Flow, Solid Deformation and Stress in a Poro-Elastic Cylinder **AM 784**

## Porosity Effects

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **1 87**

## Porosity Parameter

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

## Porous Bearings

An Analytical Study of Starved Porous Bearings **L 38**

Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (78-Lub-30) **L 338; (D) (AC) L 348; (Er) L 525**

## Porous Channel

Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel **AM 21**

## Porous Gas Journal Bearings

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

## Porous Layers

A Note on Thermal Convection in a Saturated, Heat-Generating Porous Layer (TN) **HT 169**

Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**

## Porous Media

Convective Heat Transfer in Porous Media (78-HT-45) **HT 507**

Stability of Flow from a Nuclear Cavity (79-FE-5) **F 335**

Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 680**

## Porous Metal Bearings

Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 99**

## Porous Thrust Bearings

Heat Transfer Characteristics of a Porous Thrust Bearing (TB) **L 531**

## Porous Wall Journal Bearings

Porous Wall Gas Lubricated Journal Bearings: Experimental Investigation **L 486**; Theoretical Investigation **L 458**

## Post-Stenotic Pressure Fluctuations

Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**

## Postbuckling

Initial Postbuckling of Three-Hinged Circular Arch (BN) **AM 954**

Polkonjak, V. Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 181**

Potter, J. H. An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **1 147**

## Powder Medium

Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**

Powell, J. D. Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64; (D) DS 69; (AC) DS 70**

## Power Absorption

Optimization of Power Absorption From Sea Waves **ERT 145**

## Power Bond Graph

On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) **MD 693**

## Power Control

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

## Power Extraction

Power Extraction From Ocean Surface Waves **ERT 141**

## Power Function

A Uniaxial Damage Accumulation Law for Time-Varying

Loading Including Creep-Fatigue Interaction PVT 118

#### Power Generation

Electrical Production From Moderate Temperature Geothermal Brines ERT 134

Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-16) MD 133

#### Power-Law Fluid

The Laminar Far Wake Flow of a Non-Newtonian Power-Law Fluids F 331

#### Power Loss

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) L 154; (D) L 161; (AC) L 162

The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/PROD-18) I 269

#### Power Modules

Capital Cost System Optimization of OTEC Power Modules ERT 74

Preliminary Design Study of an Integrated Tail Rotor Servo Power Module (GR) MD 366

#### Power Plant Reliability

Power Plant Reliability (GR) MD 174

#### Power Plants

Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) DS 162

Design of a Practical Controller for a Commercial Scale Fossil Power Plant DS 284

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) P 136

Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant ERT 93

Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) P 640

Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) PVT 134

Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) P 620

Utilizing Geothermal Resources Below 150 C (300 F) ERT 124

Water Production from Exhaust Gases of Steam Power Plants (TB) P 677

#### Power Rating

Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) P 349

#### Power Spectral Density

Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations BE 89

#### Power Stations

Gas Turbine Commissioning Procedure (78-GT-54) P 125

#### Power Supply Distribution

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) P 397; (D) P 404

#### Power Systems

An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (78-WA/Ener-1) P 213

#### Power Transmission

Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) MD 258

#### Power Turbines

Marine Spey—SM1A Propulsion Module (78-GT-58) P 149

#### Powerplant Integration

Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) P 259

Polonides, H. C. Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) P 290

Prabhu, B. S. Steady State Performance of a Hydrodynamic Journal Bearing With a Pseudoplastic Lubricant L 497

Prakash, R. Subsonic Turbulent Flow Past a Planar Fence F 373

#### Prebuckled Cylinders

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) I 178

#### Precipitation

Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation MT 275

#### Prediction Equations

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/PROD-11) I 311

#### Prediction Procedure

Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) P 326

#### Predictor-Radial Corrector

Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) P 226

#### Preloaded Rotors

Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings L 120

#### Press Distribution

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) L 105

#### Pressing Force

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) I 116

#### Pressure

Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) PVT 194

Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) PVT 186

Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) AM 483

Bifurcation of Elastic-Plastic Circular Cylindrical Shells Under Internal Pressure AM 889

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) ERT 117

Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes HT 270

Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) DS 84; (D) DS 69; (AC) DS 70

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) P 320

Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) MD 108

The Effect of Pressure on Skin Temperature Measurements for a Disk Sensor BE 261

An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing L 28

Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) AM 71

Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow F 200; (D) F 206; (AC) F 207

Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage HT 371

An Investigation of Regenerative Blowers and Pumps (78-WA/PD-2) I 147

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) I 178

On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations AM 78

Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions HT 306

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/PM-25) AM 31

Nucleation Processes in Large Scale Vapor Explosions HT 280

Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells ERT 99

The Problem of an Inclined Crack in an Orthotropic Strip AM 90

Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing AM 83

The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) I 211

A Study of Multiple Hole Extrusion MT 135

A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) L 242

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) L 129; (D) L 137; (AC) L 138

Transient Interaction of a Circular Plate and a Fluid Medium AM 26

Transient Response of Two Fluid-Coupled Cylindrical Elastic Shells to an Incident Pressure Pulse (79-WA/PM-15) AM 513

Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet HT 285

Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) P 343

#### Pressure Angle

Design Charts for Disk Cams with Reciprocating Radial Roller Followers (78-DET-36) MD 485

#### Pressure Changes

Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $\Lambda > 300$ ) L 64

#### Pressure Condensers

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) P 483

#### Pressure Contour

Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) L 92

#### Pressure Curves

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) L 86

#### Pressure Distortion

Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) P 118

#### Pressure Distribution

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) L 145; (D) L 152; (AC) L 153

An Analytical Study of Starved Porous Bearings L 38

Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) P 292

Consolidation in Transversely Isotropic Solids AM 65

On the Design of Thin Subsonic Airfoils AM 6

Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) P 290

The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) P 61

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) L 190; (D) L 198; (AC) L 200

Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) P 33; (D) P 39; (AC) P 40

Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) MD 330

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) I 97

Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) MD 199

#### Pressure Drop

Laminar Transport Phenomena in parallel Channels with a Short Flow Construction HT 217

Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface HT 211

#### Pressure Drop Measurements

Evaporative Heat Transfer and Pressure Drop Performance of Internally-Finned Tubes with Refrigerant 22 HT 447

#### Pressure Field

Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) HT 359

#### Pressure Flow Factors

Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) L 220; (D) L 229; (AC) L 230

#### Pressure Fluctuations

Experimental Investigation of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) P 52; (D) P 59; (AC) P 60

Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations BE 89

#### Pressure Gradients

Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) P 101

Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel AM 21

A General Theory for Laminar Lubrication With Reynolds Roughness L 8

Investigations of Pulsating Turbulent Pipe Flow (79-WA/FE-12) F 436

Linearized  $k-\epsilon$  Analysis of Free Turbulent Mixing in Streamwise Pressure Gradients With Experimental Verification AM 493



### Pressure Instrumentation

Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) **P 373**

### Pressure Levels

Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

### Pressure Load

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

### Pressure Loading

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**

### Pressure Loss

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**

Estimation of Pressure Loss in Ring-Type Exit Chambers **F 511**

Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**

Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**

### Pressure Measurements

Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 78**

### Pressure Nozzles

Drop-Size Distributions of Bingham Liquid (PAINT) Sprays Produced by Fan-Jet Pressure Nozzles **I 449**

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**

### Pressure Profile

Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231; (D) L 238; (AC) L 239**

### Pressure Pulse

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**

Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**

### Pressure Pulse Propagation

Pressure Pulse Propagation in Two-Component Slug Flow **F 44**

### Pressure Range

Experimental Investigation of a Variable Geometry, Radial Ejector (79-WA/FE-8) **F 491**

### Pressure Ratios

Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 199**

The Pressure Ratio in the Theory of Bin Pressures (79-WA/AM-13) **AM 524**

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

Propulsion System Considerations for the Subsonic V/STOL (78-GT-57) **P 228**

### Pressure Recovery

Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**

The Computation of Optimum Pressure Recovery in Two-Dimensional Diffusers (D) (AC) **F 403**

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

### Pressure Regulators

Squareness-Under-Load Testing and Buckling of Springs (TB) **MD 315**

### Pressure Relief Valves

Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**

### Pressure Signals

A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305; (D) P 313; (AC) P 314**

### Pressure Transients

An Investigation of Pressure Transients in Viscoelastic Pipes (79-WA/FE-10) **F 495**

### Pressure Variation

Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

### Pressure Vessel Alloys

Development of Fatigue Design Curves for Pressure Vessel Alloys Using a Modified Langer Equation **PVT 292**

### Pressure Vessel & Piping Codes

The Application of ASME Code Case 1828 **PVT 87**

National Board and ASME History on Safety Valves and Safety Relief Valves **PVT 94**

Pressure Vessels of Noncircular Cross Section (Commentary on New Rules for ASME Code) **PVT 255**

### Pressure Vessel Research Committee

Can Fracture Mechanics Determine Defect Tolerance? **PVT 97**

Fitness-for-Purpose Approach to Codes **PVT 97**

PVRC Honors Robert D. Stout **PVT 177**

PVRC Moves Ahead As Support Grows **PVT 177**

Recent WRC Bulletins **PVT 268**

Welding Research Briefs **PVT 177**

Welding R&D Explored with Commerce Department **PVT 268**

WRC Bulletin 145-Jan. 1979 **PVT 177**

WRC Bulletin 243-Nov. 1978 **PVT 177**

WRC Will Distribute Welding Information Services **PVT 97**

### Pressure Vessels

Application of Corrosion Fatigue Crack Growth Rate Data to Integrity Analyses of Nuclear Reactor Vessels (79-PVP-16) **MT 182**

Calculation Method for Residual Stress Analysis of Filament-Wound Spherical Pressure Vessels (GR) **MD 174**

Composite Spherical Pressure Vessels With Hardening Metal Liners (78-PVP-5) **PVT 200**

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**

Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 165**

The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**

Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) **PVT 298**

Layered Cylindrical Pressure Vessels (78-PVP-103) **PVT 80**

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

### Pressure Waves

Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

### Pressure Welding

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**

### Pressurized Elastoplastic Tubes

Large Strain Solution for Pressurized Elastoplastic Tubes (BN) **AM 228**

### Pressurized Gas Journal Bearings

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

### Pressurized Pipelines

An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**

### Pressurized Shells

Elastic and Elastic-Plastic Buckling of Internally Pressurized 2:1 Ellipsoidal Shells (E) **PVT 112**

### Pressurized Water Reactors

Fatigue Crack Growth of Stainless Steel Piping in a Pressurized Water Reactor Environment **PVT 73**

The Thermal-Hydraulic Phenomena Resulting in Early Critical Heat Flux and Rewet in the Semicore Core **HT 43**

Presli, J. B. The Relative Value of Energy Derived From Municipal Refuse (D) **ERT 257; (AC) ERT 259**

### Pre-twisted Blades

Vibration Frequencies of a Twisted Uniform Blade with One End Spring Hinged and the Other Free (TB) **P 679**

### Preventive Maintenance

Multi-Tool Machining Analysis—Part 1 Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**

Prevorsek, D. C. Melt Spinning of Fibers: Effect of Air Drag (78-Tex-7) **I 73**

Priemer, R. Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 278**

### Prismatic Bodies

On the Motion of Rectangular Prismatic Bodies (79-FE-3) **F 193**

### Prisms

Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180; (D) (AC) L 188**

### Probe Design

Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) **P 373**

### Probes

An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts (78-WA/PTC-1) **P 655**

A Probe for the Measurement of the Velocity Field **F 143**

Skin Temperature Probe **BE 232**

### Process Conditions

Materials Problems Experienced at the Synthene Coal-Gasification Pilot Plant **MT 105**

### Process Facilities

A Unique Approach to the Offshore Gas Disposal Problem: Castellan SALS Production Facilities **ERT 210**

### Process Heat Generation

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

### Process Parameters

Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**

### Processed Refuse

Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

### Processing Machinery

Textile Machinery Research 1948-1978 (78-Tex-8) **I 45**

### Processing Systems

Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) **I 197**

The Relative Value of Energy Derived from Municipal Refuse **ERT 251; (D) ERT 255-258; (AC) ERT 258**

### Processing Technique

Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**

### Production Drop Forging

Die Temperatures During Production Drop Forging (78-WA/PROD-28) **I 385**

### Production Efficiency

Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**

### Production Machinery

Principles and Criteria of Vibration Isolation of Machinery **MD 682**

### Production Methods

A Survey of Cam Manufacture Methods (78-DET-65) **MD 455**

### Production Planning

Multi-Tool Machining Analysis—Part 1 Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**, Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

### Production Procedures

Gas Turbine Commissioning Procedure (78-GT-54) **P 125**

### Profile Characteristics

Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**

### Profile Errors

Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**

### Profile Measurements

Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 165**

Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) **L 409; (D) (AC) L 418**

Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**

### Profiling Mechanisms

Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108**

Dynamic Accuracy of Profiling Mechanisms in Cam Manufacturing (D) **MD 519**

### Programming Methods

A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) **MD 355**

### Programming Techniques

Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**

A State Space Method for Optimal Design of Vibration Isolators **MD 306**



## Propagation

- On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**
- The Propagation of Boiling Boundary Phase-Change Fronts in Moving Fluids (78-WA/FE-18) **F 270**
- The Propagation of a Crack by a Rigid Wedge in an Infinite Power Law Viscoelastic Body (79-WA/APM-10) **AM 805**

## Propellers

- Effects of Additive Ejection on Lifting Hydrofoils (77-FE-27) **F 244**

## Proportional Amplifiers

- Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers With Positive Feedback (78-WA/DSC-3) **DS 77**

## Propulsion Control Integration

- Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**

## Propulsion Cycle

- Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

## Propulsion Module

- Marine Spey—SM1A Propulsion Module (78-GT-58) **P 149**

## Propulsion System

- Propulsion System Considerations for the Subsonic V/STOL (78-GT-57) **P 228**

- USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397; (D) P 404**

- Proszanski, A. On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) **MD 693**

## Prototype Bearings

- A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164; (D) (AC) L 170**

## Prototype Chamber

- Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**

## Prototype Control

- A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305; (D) P 313; (AC) P 314**

## Prototype Systems

- An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**

## Prototype Testing

- On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) **MD 693**

- The Value of Prototype Testing in the Development of the In-Vessel Handling Machine for FFTF (78-WA/NE-3) **P 651**

## Pseudo Bond Graphs

- State Variables and Pseudo Bond Graphs for Compressible Thermofluid Systems **DS 201**

## Pseudo-Random Binary Noise Method

- Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**

## Pseudoplastic Lubricants

- Steady State Performance of a Hydrodynamic Journal Bearing With a Pseudoplastic Lubricant **L 497**

- Pu, S. L. Note on Apex Singularities of a Wedge-Shaped Crack Under All Modes (BN) **AM 705**

## Pulsatile Flow

- Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**

## Pulsatile Flow Response

- Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**

## Pulsatile Flowfield

- Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) **BE 141; (D) BE 149; (AC) BE 150**

## Pulsating Turbulent Pipe Flow

- Investigations of Pulsating Turbulent Pipe Flow (79-WA/FE-12) **F 438**

## Pulverized Coal Particles

- Critical Regimes of Coal Ignition (78-JPGC/Fu-1) **P 576**

## Pump Cycles

- The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 162**

## Pump Mechanism

- Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**

## Pump Pressures

- Higher Pump Pressures Can Reduce Drilling Costs **ERT 59**

## Pump Surge Behavior

- First Order Pump Surge Behavior (D) **F 530-531; (AC) F 531**

## Pumping

- Peristaltic Pumping by a Lateral Bending Wave **BE 239**

## Pumping Power Evaluation

- Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) **P 109**

## Pumping System

- A Simulation of the Dynamics of Counterpulsation **BE 105**

## Pumps

- An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **I 147**

- Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 649**

## Punched Holes

- Waves From Suddenly Punched Hole in Plate Subjected to Uniaxial Tension Field (79-WA/APM-32) **AM 873**

## Purity Measurement

- The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**

- Putman, W. F. Nonlinear Wheelset Forces in Flange Contact—Part 2: Measurements Using Dynamically Scaled Models **DS 247**

- Puzak, P. P. Metallurgical and Mechanical Considerations in Selection of a Fracture-Safe Explosives Containment Vessel (79-PVP-24) **PVT 242**

## Pyrolytic Carbon

- Materials for Human Implantation **BE 2**

## Q

## Quadrilateral Plates

- Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/APM-25) **AM 895**

## Quartz Abrasives

- Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**

## Quasi-3D Calculation Program

- An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**

## R

- Rabas, T. J. Capital Cost System Optimization of OTEC Power Modules **ERT 74**

- Rabinowicz, E. Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (D) (AC) **L 207**

- Rabins, M. J. On the 1978 ASME Winter Annual Meeting Forum Theme—"Measurement and Control Serving Mankind" (F) **DS 4**

- Rachovitsky, E. Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**

- Rack, H. J. The Strain-Rate and Temperature Dependence of 18Ni (350) Maraging Steel Tensile Properties **MT 91**

- Radhamohan, S. K. Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) **PVT 216; Plastic Collapse of Thin Internally Pressurized Torispherical Shells PVT 311**

## Radial Compressors

- Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**

## Radial Deviation

- Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**

## Radial Diffusers

- Experimental Investigation of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) **P 52; (D) P 59; (AC) P 60**

## Radial Distance

- Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**

## Radial Distribution

- An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) **P 233; (D) P 245; (AC) P 248**

## Radial Ejector

- Experimental Investigation of a Variable Geometry, Radial Ejector (79-WA/FE-8) **F 481**

## Radial Forces

- Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**

## Radial Jet

- The Laminar Flat Radial Jet of an Incompressible Power Law Fluid (BN) **AM 210**

## Radial Load

- A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearings Design (78-Lub-28) **L 164; (D) (AC) L 170**

## Radial Loads

- Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 128**

## Radial Roller Followers

- Design Charts for Disk Cams with Reciprocating Radial Roller Followers (78-DET-36) **MD 485**

## Radial Turbomachines

- A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 459**

## Radiant Exchange

- Radiant Exchange for a Fin and Tube Solar Collector (TN) **HT 185**

## Radiant Properties

- Selected Ordinates for Total Solar Radiant Property Evaluation from Spectral Data **HT 101**

## Radiation

- Influence of Thermal Radiation on the Temperature Distribution in a Semi-Transparent Solid **HT 76**

- Perturbation Solutions to Phase Change Problem Subject to Convection and Radiation (77-WA/HT-16) **HT 96**

- The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-86) **JERT 240**

- Diffuse Radiation View Factors from Differential Plane Sources (TN) **HT 558**

- A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection **HT 582**

## Radiation Absorption

- Prediction of Radiation Absorption and Scattering in Turbid Water Bodies (77-HT-47) **HT 83**

## Radiation Hardening

- The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**

## Radiative Exchange

- Surface Radiative Exchange in Rod Bundles (TN) **HT 378**

## Radiative Heat Transfer

- A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**

## Radiative Heating

- Back-Melting of a Horizontal Cloudy Ice Layer with Radiative Heating **HT 90**

## Radiative Properties

- Apparent Radiative Properties of an Isotropically Scattering Medium on a Diffuse Substrate **HT 68**

## Radiative Transfer

- Band Radiation within Diffuse-Walled Enclosures—Part I: Exact Solutions for Simple Enclosures **HT 81; Part II: An Approximate Method Applied to Simple Enclosures HT 85**

- An Iterative Solution for Anisotropic Radiative Transfer in a Slab **HT 685**

- Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) **HT 376**

- Radiative Transfer in Hartmann MHD Flow (78-HT-18) **HT 502**

- A Simple Differential Approximation for Radiative Transfer in Non-Gray Gases (TN) **HT 735**

- A Three-Flux Method for Predicting Radiative Transfer in Aqueous Suspensions **HT 498**

- Raghava, A. K. A Probe for the Measurement of the Velocity Field **F 143**

- Raghevan, C. Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**

- Raghevan, M. R. Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**

- Raghevan, T. M. S. Optimal Design Using Brittle Materials (BN) **AM 708**

- Ragheb, H. S. Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) **HT 381**

## Rail Friction

Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) **I 278**

## Rail Irregularities

Comparative Study of the Linear and Non-Linear Locomotive Response **DS 263**

## Rail Vehicles

Lateral Stability of Freight Cars With Axes Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**  
Nonlinear Analysis of Rail Vehicle Forced Lateral Response and Stability **DS 230**

## Railroad Car Wheels

Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) **I 378**

## Railroad Technology

A Review of Rail-Wheel Contact Stress Problem (GR) **MD 175**

## Railway Systems

Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) **F 128**

## Railway Vehicles

Steering and Stability of Unsymmetric Articulated Railway Vehicles **DS 258**

Rajalah, K. Optimum Hole Shapes in Finite Plates Under Uniaxial Load (DDM) **AM 691**

Rajalingham, C. Steady State Performance of a Hydrodynamic Journal Bearing With a Pseudoplastic Lubricant **L 487**

Raja, P. V. V. The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**

Ramalingam, S. Flow Stress Model in Metal Cutting (D) (AC) **I 415**

Ramamurthy, P. Isothermal, Compressible-Gas Flow in Horizontal Pipes With an Imperfect Gas **F 76**

Ramamurthy, A. S. Two Dimensional Lateral Flow Past a Barrier (79-WA/FE-14) **F 499**; Velocity Exponent for Erosion and Noise Due to Cavitation **F 69**

Ramkrishna, D. Heat Transfer in Composite Solids with Heat Generation **HT 137**

Ramsey, J. W. Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**; Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow **F 206**; (D) **F 206**; (AC) **F 207**; Freezing Controlled by Natural Convection **HT 578**; Melting about a Horizontal Row of Heating Cylinders (TN) **HT 732**

Rana, R. Natural Convection in a Multi-Layered Geothermal Reservoir **HT 411**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

Randall, K. R. Natural Convection Heat Transfer Characteristics of Flat Plate Enclosures **HT 120**

## Rate Equations

Rate Equations for Elevated Temperature Creep **MT 398**

## Rate-Sensitive Steel

The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel **MT 258**

## Rate Sensitivity

A Simplified Method to Account for Plastic Rate Sensitivity With Large Deformations (79-WA/APM-27) **AM 811**

## Rating Procedure

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

## Rational Analysis

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

## Rational Plane Cubics

Symmetrical Algebraic Motions in the Plane (78-DET-4C) **MD 15**

Ratzel, A. C. Techniques for Reducing Thermal Conduction and Natural Convection Heat Losses in Annular Receiver Geometries **HT 108**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 1 Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**; Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Ravignani, G. L. Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Three-Dimensional Numerical Analysis of Transient Natural Convection in Rectangular Enclosures **HT 114**

## Rectangular Plate

Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**

## Rectangular Plates

Nonlinear Vibration of Rectangular Plates (BN) **AM 215**

## Rectangular Prismatic Bodies

On the Motion of Rectangular Prismatic Bodies (79-FE-3) **F 193**

## Recuperative Gas Cycle Power Plants

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

## Red Cell Suspensions

The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**

Redekop, D. Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) **PVT 186**

## Reduction Gear Assembly

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397**; (D) **P 404**

## Reduction Procedure

Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (78-DET-5) **MD 380**; (D) (AC) **MD 385**

## Redundant Actuators

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 467**

Reece, A. M. Semisubmersible Rig Motion Studies Offshore of Alaska and Southern California **ERT 182**

Reed, D. B. A New Formulation for Computational Fluid Dynamics **F 453**

## Reef Contour

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

## Reference Radial Rotor

Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440**; (D) **P 448**; (AC) **P 448**

## Reference Stress Concept

Reference Stress and Temperature for Nonisothermal Creep of Structures **AM 795**

## Reference Stresses

The Development of High Temperature Design Methods Based on Reference Stresses and Bounding Theorems **MT 349**

## Reflectance Measurement

Evaluation of Integrating Sphere Surfaces for Infrared Pyrometers (TN) **HT 379**

## Reflection

Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: SH Motion (79-WA/APM-5) **AM 625**

## Reflectors

Analysis of Diffuse-Specular Axisymmetric Surfaces with Application to Parabolic Reflectors (79-HT-22) **HT 589**

## Refrigerant 22

Evaporative Heat Transfer and Pressure Drop Performance of Internally-Finned Tubes with Refrigerant 22 **HT 447**

## Refrigerated Warehouses

Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) **MD 633**

## Refrigeration Systems

Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 300**

## Refueling Systems

The Value of Prototype Testing in the Development of the In-Vessel Handling Machine for FFTF (78-WA/NE-3) **P 651**

## Refuse

Corrosion and Depositions from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

## Regenerative Blowers

An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **I 147**

## Regenerative Chatter

Development of a Hydraulic Chambered, Actively Controlled Boring Bar **I 362**

## Regenerators

Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**

Periodic Thermal Storage: The Regenerator **HT 726**

## Regression Lines

Some Observations Regarding the Statistical Determination of Stress Rupture Regression Lines **PVT 286**

## Reheating Hotwells

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**

## Reinforced Cylinders

Layered Cylindrical Pressure Vessels (78-PVP-103) **PVT 80**

## Reliability Analysis

Reliability Analysis of Cutting Tools (78-WA/PROD-9) **185**

Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) **MD 625**

Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/PROD-8) **1250**

Reliability, Availability, and Maintainability Analysis of the LSAAP 105MM Assembly Line (GR) **MD 175**

## Reliability Assessment

Reliability as Materials Property (78-WA/Mat-1) (D) **MT 177**

## Reliability Criteria

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

## Reliability Effect

The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**

## Reliability Evaluation

Power Plant Reliability (GR) **MD 174**

Reliability Evaluation Program Manual (GR) **MD 175**

## Reliability Growth

AMSA 2nd Reliability Growth Symposium 12-13 November 1974 (GR) **MD 175**

## Reliability Issue

Reliability, Maintainability, and Performance Issues in Hydraulic System Design (GR) **MD 174**

## Reliability Methods

Collection of Methods for Reliability and Safety Engineering (GR) **MD 175**

## Reliability Target Level

Reliability as a Materials Property (78-WA/Mat-1) **MT 27**

## Reliability Theory

Bibliography on Reliability, Addendum I (GR) **MD 174**

## Reliability Update

Update to Reliability and Maintainability Planning Guide for Army Aviation Systems and Components (GR) **MD 175**

## Relief Valves

Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**

## Remaining Life Concept

Creep Damage and the Remaining Life Concept **MT 311**

Renk, E. J. An Evaporating Ethanol Meniscus—Part I: Experimental Studies **HT 55**; Part II: Analytical Studies **HT 59** (Er) **HT 575**

## Research Compressor

A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305**; (D) **P 313**; (AC) **P 314**

## Research Issue

Discrete Parts Assembly Automation—an Overview (78-WA/DSC-11) (F) **DS 8**

## Residual Fatigue Life

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

## Residual Fuel Oils

Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

## Residual Strain

The Residual Strain Distribution Around a Fastener Hole Coldworked With a Tube Expander (TB) **MT 304**

## Residual Stress

A Computer Program for Calculation of the Residual Stress Distribution and the Effective Stress Strain Curve of Cold-Formed Structural Members (GR) **MD 174**

## Residual Stress Analysis

Calculation Method for Residual Stress Analysis of Filament-Wound Spherical Pressure Vessels (GR) **MD 174**

## Residual Stresses

Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) **PVT 149**

## Residual Thermal Stress

Residual Thermal Stresses Due to Cool-Down of Epoxy-Resin Composites (79-WA/APM-9) **AM 563**

## Resisting Loads

Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**

## Resonance Methods

Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids (BN) **AM 958**

## Resonance Response

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part II: Application and Experiment (78-DET-24) **MD 89**

## Resonant Excitation

Resonant Excitation of a Spinning, Nutating Plate **AM 132**

## Resource Utilization

Utilizing Geothermal Resources Below 150 C (300 F) **ERT 124**

## Response Distribution

Fatigue Analysis of Offshore Structures **JERT 218**

## Retarded Flow

Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**

## Reverse Plastic Flow

Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **1104**

## Reversed Brayton Cycle Heat Pump

The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 162**

## Revolute Dyad

On the Existence of Circle-Point and Center-Point Circles for Three-Precision-Point-Dyad Synthesis (78-DET-44) **MD 554**

## Revolving Links

A Reassessment of Grashof's Criterion (TB) **MD 515**

## Reynolds Boundary Conditions

Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231**; (D) **L 238**; (AC) **L 239**

## Reynolds Equation

Fluid-Film Flows of Differential Fluids of Complexity **n** Dimensional Approach—Applications to Lubrication Theory **L 140**

Numerical Solution of Reynolds Equation With Slip Boundary conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**

The Validity of Some Approximate Solutions to Reynolds Equation (TB) **L 385**

## Reynolds Number

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145**; (D) **L 152**; (AC) **L 153**

Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**

The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**

Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**

Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 109**

Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**

Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) **P 337**

Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel **AM 21**

Laminar Transport Phenomena in parallel Channels with a Short Flow Construction **HT 217**

Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) **P 79**

Small Reynolds Number Electro-Hydrodynamic Flow Around Drops and the Resulting Deformation (79-WA/APM-8) **AM 510**

Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**

Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23**; (D) **P 29**; (AC) **P 30**

A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) **P 670**

Symmetrical Velocity Profiles for Jeffery-Hamel Flow (BN) **AM 214**

## Reynolds Number Convection

Small Reynolds Number Convection in Rotating Spherical

Annuli **HT 427**

## Reynolds Number Effects

A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384**; (D) **P 392-394**; (AC) **P 395**

## Reynolds Roughness

A General Theory for Laminar Lubrication With Reynolds Roughness **L 8**; (D) **L 537**; (AC) **L 538**

## Reynolds Stress Model

A Reynolds Stress Model for Flows With Drag Reduction **F 159**

## Rheological Models

Fluid-Film Flows of Differential Fluids of Complexity **n** Dimensional Approach—Applications to Lubrication Theory **L 140**

A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) **L 250**; (D) **L 264**; (AC) **L 265**

Rice, W. Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (78-WA/FE-41) **F 87**

Richards, R., Jr. Harmonic Holes for Nonconstant Fields (79-APM-30) **AM 573**

Richardson, H. H. Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Lift and Guidance **DS 217**

Richter, H. J. An Isentropic Streamtube Model for Flashing Two-Phase Vapor-Liquid Flow (Er) **HT 375**

Rickenbach, D. H. Fillet Size in a Liquid Jet (79-FE-1) **F 105**; (D) **F 106**

Rieutord, E. An Investigation of Pressure Transients in Viscoelastic Pipes (79-WA/FE-10) **F 485**

## Rig Motion

Semisubmersible Rig Motion Studies Offshore of Alaska and Southern California **JERT 182**

## Rigid Bodies

Computation of Rigid-Body Rotation in Three-Dimensional Space From Body-Fixed Linear Acceleration Measurements (78-WA/Bio-5) **AM 925**

Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**

## Rigid Body Dynamics

Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 50**

## Rigid Body Motion

Technology Transfer in Biokinematics of the Human Spine (78-DET-88) **MD 594**

## Rigid Boundaries

A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**

## Rigid-Plastic Solids

Uniqueness of Plane Strain Deformation of Rigid-Plastic Solids Under Lateral Pressure (BN) **AM 959**

## Rigid Punch

A Rigid Punch Bonded to a Half Plane (79-WA/APM-38) **AM 844**

## Rigid Rotor

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings **L 48**

## Rigid Spheres

Response of a Rigid Sphere Embedded in an Elastic Medium to Random Disturbances (BN) **AM 951**

## Ring Chamber

Observation of Flow in a Ring Inlet Chamber **F 135**

## Ring Design

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

## Ring-Type Exit Chambers

Estimation of Pressure Loss in Ring-Type Exit Chambers **F 511**

## Rings

Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**

Calculation of Shape Factors between Rings and Inverted Cones Sharing a Common Axis (D) (AC) **HT 189**

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**

Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 410**; (D) **L 423**

## Rippled Fins

Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**

## Risk Analysis

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**



- Rivin, E. I.** Principles and Criteria of Vibration Isolation of Machinery **MD 682**
- Rizzetta, D. P.** Airfoil Design in Subcritical and Supercritical Flows **AM 751**
- Roark, R. J. (author)** Formulas for Stress and Strain—5th Edition (BR) **MD 173**
- Roberts, B. W.** Remaining Creep or Stress-Rupture Life Under Nonsteady Temperature and Stress **MT 331**
- Roberts, W. B.** A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**
- Robinson, C. P.** Thermography as a Means of Blood Perfusion Measurement **BE 246**
- Robinson, R. A.** Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) **P 646**
- Robinson, J. E.** Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**
- Robotic Manipulators**  
The Application of Model-Referenced Adaptive Control to Robotic Manipulators **DS 193**
- Rock/Bit-Tooth Interaction**  
Effects of Strain Hardening on Rock/Bit-Tooth Interaction (77-Pet-70) **ERT 53**
- Rock Formation**  
Natural Convection in a Multi-Layered Geothermal Reservoir **HT 411**
- Rock Fracture**  
A Stress Gradient Theory of Rock Fracture in Drilling **ERT 46**
- Rock Properties**  
Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**
- Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) **ERT 112**
- Rockier Acceleration**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 26**
- Rocker Link**  
The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**; Part II: Application and Experiment (78-DET-24) **MD 95**
- Rock Mechanics Evaluation**  
National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**; Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**
- Rod Bundles**  
Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**
- Predicted Secondary Flows in Triangular Array Rod Bundles (79-WA/FE-2) **F 354**; (D) (AC) **F 362**
- A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**
- Surface Radiative Exchange in Rod Bundles (TN) **HT 378**
- Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**
- Rodgers, C.** Computer Aided Design of Mixed Flow Turbines for Turbochargers (D) **P 448**; (AC) **P 449**
- Rodkiewicz, C. M.** Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**
- Rods**  
Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids **AM 519**
- The Role of Saint Venant's Solutions in Rod and Beam Theories **AM 561**
- Roetzel, W.** Calculation of Mean Temperature Difference in Air-Cooled Cross-Flow Heat Exchangers **HT 511**
- Rogers, V. C.** Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **DS 37**
- Roggli, R.** Thermography as a Means of Blood Perfusion Measurement **BE 246**
- Roemer, R. B.** The Effect of Pressure on Skin Temperature Measurements for a Disk Sensor **BE 261**; Skin Temperature Probe **BE 232**
- Rohatgi, P. K.** Seizure Resistance of Cast Aluminum Alloys Containing Dispersed Graphite Particles of Different Sizes **L 376**
- Rohde, S. M.** Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (D) **L 198**; (AC) **L 206**; Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**
- Rohsenow, W. M.** On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 288**
- Roll Cells**  
A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**
- Roll Deformation**  
A Study of Cold Strip Rolling **MT 129**
- Roller/Ball Bearing Vibrations**  
Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**
- Roller/Ball Vibrations**  
Analysis of Roller/Ball Vibrations (D) (AC) **MD 519**
- Roller Bearing Design**  
A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164**; (D) (AC) **L 176**
- Roller Bearings**  
An Optical Study of the Lubrication of a 65 mm Cylindrical Roller Bearing (78-Lub-27) **L 327**; (D) (C) **L 337**
- Roller Bending Machines**  
Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/PROD-6) **I 304**
- Roller Gear Transmission**  
3000-HP Roller Gear Transmission Development Program. Volume VI. Reliability and Maintainability Report (GR) **MD 174**
- Roller Motion**  
Dynamics of Rolling-Element Bearings—Part 1: Cylindrical Roller Bearing Analysis (78-Lub-25) **L 293**; (D) (AC) **L 303**; Part II: Cylindrical Roller Bearing Results (78-Lub-26) **L 305**; (D) (AC) **L 311**; Part III: Ball Bearing Analysis (78-Lub-32) **L 312**; Part IV: Ball Bearing Results (78-Lub-33) **L 319**
- Rolling Element Bearings**  
The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) **L 105**
- Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180**; (D) (AC) **L 188**
- Romle, F. E.** Periodic Thermal Storage: The Regenerator **HT 726**
- Roos, J. H.** The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 648**
- Rope Construction**  
Contact Problems in Wire Ropes (79-DE-2) **MD 702**
- Rosen, A.** The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**
- Rosenberg, R. M. (reviewer)** Nichtlineare Schwingungen (BR) **AM 238**
- Rosenberg Conditions**  
On a Class of Modes Defined by Rosenberg (BN) **AM 763**
- Rosenthal, D. E.** On the Optimal Digital State Vector Feedback Controller With Integral and Preview Actions **DS 172**
- Roslaker, W.** Materials for Human Implantation **BE 2**
- Rotary Car Dumper**  
Rotary Car Dumper Systems **I 90**
- Rotary Ceramic Regeneration Structures**  
A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-116) **P 270**
- Rotary Inertia**  
Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**
- Rotary Inertia Effects**  
Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**
- Rotary Motion**  
General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**
- Rotary Output Systems**  
A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 62**
- Rotary Pump Mechanism**  
Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**
- Rotating Disk**  
Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**
- Rotating Electromagnetic Shields**  
Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**
- Rotating Fluid**  
A Study of Penetrative Convection in Rotating Fluid **HT 261**
- Rotating Machinery**  
Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**
- Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**
- Rotating Machines**  
Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**
- Rotating Plates**  
Resonant Excitation of a Spinning, Nutating Plate **AM 132**
- Rotating Pressure Patterns**  
Experimental Investigations of Unsteady Phenomena in Vaneless Radial Diffusers (78-GT-23) **P 52**; (D) **P 59**; (AC) **P 60**
- Rotating Stall Control System**  
A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305**; (D) **P 313**; (AC) **P 314**
- Rotating Systems**  
Free Shear Layer Behavior in Rotating Systems **F 117**; (D) (AC) **F 120**
- Rotating Wheel**  
Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**
- Rotation Axes**  
Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**
- Rotation Mechanism**  
A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet **MT 80**
- Rotational Mechanisms**  
An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 188**
- Rotational Range**  
Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**
- Rotational Restraints**  
Fundamental Frequency of Beams With Elastic Rotational Restraints (TB) **MD 711**
- Rotational Speed**  
Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33**; (D) **P 39**; (AC) **P 40**
- Rotations**  
The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**
- Roth, B.** Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32**; Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**; Symmetrical Algebraic Motions in the Plane (78-DET-40) **MD 15**
- Roth, P. H.** Free Shear Layer Behavior in Rotating Systems **F 117**; (D) (AC) **F 120**
- Rotor Angular Velocity**  
Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) **P 87**
- Rotor Bearings**  
Flow in a Whirling Rotor Bearing **AM 787**
- Rotor Blades**  
A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 450**
- On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction **P 459**
- Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**
- Rotor Power Module**  
Preliminary Design Study of an Integrated Tail Rotor Servo Power Module (GR) **MD 366**
- Rotor Vibrations**  
Fluid Dynamic Excitation of Centrifugal Compressor Rotor Vibrations (D) **F 401**; (AC) **F 402**
- Rotors**  
Air Model Tests of Labyrinth Seal Forces on a Whirling Rotor (D) (AC) **P 212**
- Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 446**; (D) **P 448**; (AC) **P 449**
- Constrained Balancing Techniques for Flexible Rotors (78-WA/DE-8) **MD 298**
- A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**
- A Fundamental Criterion for the Application of Rotor Casing



Treatment **F 237**  
 Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) **MD 640**  
 Stability of a Rotor Partially Filled With a Viscous Incompressible Fluid (79-WA/APM-28) **AM 913**  
 Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**  
**Rough Sliding Surfaces**  
 Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220; (D) L 229; (AC) L 230**  
**Rough Surfaces**  
 Strongly Anisotropic Rough Surfaces (78-Lub-16) **L 15**  
**Rough Wall**  
 The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**  
**Round Holes**  
 Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**  
**Round Notched Bar**  
 Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**  
**Rowe, D. S.** Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods (D) **F 435**  
**Rotz, C. A.** Vortex Motions Induced by V-Grooved Rotating Cylinders and Their Effect on Mixing Performance (79-FE-2) **F 186**  
**Rub-Induced Parametric Excitation**  
 Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) **MD 640**  
**Rubinsky, B.** The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 326**  
**Rubis, C. J.** USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (D) **P 404**  
**Rudinger, G. A.** A Numerical Study of the Laminar Viscous Incompressible Flow Through a Pipe Orifice (D) **AC) F 290**  
**Rummier, D. R.** Analysis of Misalignment in the Tension Test **MT 58**  
**Running-In Process**  
 Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 99**  
**Rupture**  
 Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation **PVT 276**  
**Rupture Behavior**  
 An Analysis of the Rupture Behavior of Pressurized Fast Reactor Cladding Tubes Subjected to Thermal Transients **MT 253**  
**Rupturing High-Pressure Vessels**  
 Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 185**  
**Rusin, T. M.** Application of the Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) **I 378**  
**Russell, S. H.** A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) **P 570**  
**Ruth, L. A.** Erosion-Corrosion Effects on Boiler Tube Metals in a Multisolid Fluidized-Bed Coal Combustor (D) **P 7; (AC) P 8**  
**Ryticki, E. F.** Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) **PVT 149**

## S

**Sabersky, R. H.** Gravity Flow of Granular Materials in Conical Hoppers (79-WA/APM-20) **AM 529**  
**Sabina, W. E.** Rotary Car Dumper Systems **I 90**  
**Sadananda, K.** Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) **AC) MT 178; Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) MT 224**  
**Sedhal, S. S.** An Analytical Estimate of the Microlayer Thickness in Nucleate Boiling (TN) **HT 180; Effect of Solid Properties and Contact Angle in Dropwise Condensation and Evaporation HT 48**  
**Sedler, J. P.** Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) **MD 99**

**Safety Consideration**  
 Energy Release From Rupturing High-Pressure Vessels: A Possible Code Consideration **PVT 185**  
**Safety Engineering**  
 Collection of Methods for Reliability and Safety Engineering (GR) **MD 175**  
**Safety Factors**  
 Appliance Safety by Design (GR) **MD 366**  
**Safety Ratings**  
 Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**  
**Safety Valves**  
 National Board and ASME History on Safety Valves and Safety Relief Valves **PVT 94**  
**Satbel, E. (recipient)** Mayo D. Hershey Award **L 113**  
**Said, M. N. A.** Laminar Free Convection in Small Aspect Ratio Rectangular Enclosures with Isothermal Boundary Conditions (TN) **HT 569**  
**Saint Venant's Solutions**  
 The Role of Saint Venant's Solutions in Rod and Beam Theories **AM 861**  
**Saito, Y.** An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**  
**Sakai, T.** Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281; A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio MD 274**  
**Sakal, Y.** Construction of Three-Workpiece Lapping Process (78-WA/PROD-7) **I 255**  
**Salt Mine**  
 National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82; Part II: Rock Mechanics Evaluation (78-Pet-64) ERT 87**  
**Salt Solutions**  
 Investigation of Freezing of Salt Solutions in Cr's **HT 459**  
**Sam, R. G.** An Experimental Study of Flow Over a Rectangular Body (79-WA/FE-11) **F 443**  
**Sanbe, M.** Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**  
**Sanchez, R. A.** Surface Radiative Exchange in Rod Bundles (TN) **HT 378**  
**Sandor, G. N.** On the Existence of Circle-Point and Center-Point Circles for Three-Precision-Point-Dyad Synthesis (78-DET-44) **MD 554**  
**Sandquist, G. M.** Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **DS 37**  
**Sandraz, J.-P. (author)** Commande et Regulation par Calculateur Numerique (BR) **DS 179**  
**Sandwich Plates**  
 Amplitude-Frequency Characteristics of Large-Amplitude Vibrations of Sandwich Plates (BN) **AM 230**  
**Sang Chew, Meng** Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**  
**Sankar, S.** Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108; On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (79-DE-19) MD 693; On the Torsional Vibration of Branched Systems Using Extended Transfer Matrix Method (77-WA/DE-4) MD 546**  
**Sano, Y.** Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**  
**Sanokawa, K.** Natural Convection of Mercury in a Magnetic Field parallel to the Gravity **HT 227**  
**Santilli, R. M. (author)** Foundations of Theoretical Mechanics (BR) **AM 718**  
**Sapiro, L.** A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (D) **P 394; (AC) P 395**  
**Sarvanamutto, H. I. H.** An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**  
**Sarkisyan, Y. L.** Chebyshev Approximations of Finite Point Sets with Application to Planar Kinematic Synthesis (78-DET-25) **MD 32; Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) MD 499**  
**Sarma, I. G.** Robust Multivariable Controllers for a Tubular Ammonia Reactor **DS 290**  
**Sasaki, M.** Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**  
**Satake, M. (editor)** Continuum Mechanical and Statistical Approaches in the Mechanics of Granular Materials (BR) **AM 967**

**Sathiyamoorthy, M.** Nonlinear Vibration of Rectangular Plates (BN) **AM 215**  
**Sato, S.** Diametral Compressive Testing Method **MT 139**  
**Sato, T.** Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**  
**Satter, M. A.** Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**  
**Saturated Forced Convection**  
 Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**  
**Saunders, H. (reviewer)** Flow Induced Vibration (BR) **MD 6; Formulas for Stress and Strain—5th Edition (BR) MD 173**  
**Saw Vibration**  
 A Feedback Vibration Controller for Circular Saws **DS 44**  
**Saxena, S. C.** Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed **HT 397**  
**Sayles, R. S.** Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) **L 409; (D) (AC) L 418**  
**Scaling Criterion**  
 Velocity Distributions and Turbulence Intensities at Tube-sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**  
**Scanning Infrared Camera**  
 Thermography as a Means of Blood Perfusion Measurement **BE 246**  
**Scattering**  
 Diffraction of SH-Waves by an Edge Crack **AM 101**  
 An Iterative Solution for Anisotropic Radiative Transfer in a Slab **HT 695**  
 Prediction of Radiation Absorption and Scattering in Turbid Water Bodies (77-HT-47) **HT 63**  
 Two-Dimensional Scattering from a Medium of Finite Thickness (TN) **HT 556**  
**Scattering Media**  
 Apparent Radiative Properties of an Isotropically Scattering Medium on a Diffuse Substrate **HT 68**  
**Scheduling Criteria**  
 Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**  
**Scherer, P. K.** Determining the In-Vivo Areas of Contact in the Canine Shoulder **BE 271**  
**Schiack, A. L., Jr.** Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 268**  
**Schlieren Interferometer**  
 The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 648**  
**Schmidt, R.** Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring (D) **AC) AM 963; Initial Postbuckling of Three-Hinged Circular Arch (BN) AM 954**  
**Schneider, R. W.** The Application of ASME Code Case 1828 **PVT 67**  
**Schoenhals, R. J.** Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**  
**Schreyer, H. L.** Accurate Numerical Solutions for Elastic-Plastic Models (79-PVP-107) **PVT 226**  
**Schroeder, J.** Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) **PVT 186**  
**Schultz, A. B.** Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 46; Part II: Responses in Compression and Shear; Influence of Gross Morphology BE 53; Three-Dimensional Coordinate Data Processing in Human Motion Analysis BE 279**  
**Schultz, C. C.** Consistent Creep and Rupture Properties for Creep-Fatigue Evaluation **PVT 276; Verification of Specimens for Low-Cycle Fatigue and Cyclic Plasticity Testing PVT 321**  
**Schumacker, B.** A Membrane of Revolution Loaded by Hydrostatic Pressure (BN) **AM 948**  
**Schur, T. P.** Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**  
**Schurman, D. J.** Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**

**Schwitzgebel, K.** Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**

**Sciannamarelli, C. A.** Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) **I 278**

**Scotton, T. R., Jr.** Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**

**Scott, D. (editor)** Wear, Treatise on Material Science and Technology (BR) **AM 968**

**Scott, V. D.** Effect of Metal Composition on Carburizing of Steels (TB) **MT 173**

#### **Screw Displacements**

Dynamic Analysis of Spatial Mechanisms Using Dual Successive Screw Method and D'Alembert's Principle (78-DET-22) **MD 569**

#### **Screw-System Theory**

A Compendium of Line-Symmetric Four-Bars (78-DET-14) **MD 509**

**Scrutton, R. F.** The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**

#### **Scuffing**

The Background to Current Theories of Scuffing (GR) **MD 367**

#### **Sea Ice**

Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice **ERT 196**

#### **Sea Waves**

Optimization of Power Absorption From Sea Waves **ERT 145**

#### **Seafaths**

On Pipeline Bending at the Seabed (TB) **ERT 203**

#### **Seal Forces**

Air Model Tests of Labyrinth Seal Forces on a Whirling Rotor (D) (AC) **P 212**

#### **Sealing Integrity**

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**

#### **Sealing Rings**

Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 419; (D) L 423**

#### **Sealing Systems**

Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 549**

#### **Seals**

Radial Forces in a Misaligned Radial Face Seal (78-Lub-13) **L 81**

Stiffness of Straight and Tapered Annular Gas Path Seals (78-Lub-18) **L 349; (D) L 354; (AC) L 355**

**Seborg, D. G.** Experience With Experimental Applications of Multivariable Computer Control **DS 106**

#### **Secondary Flow**

Predicted Secondary Flows in Triangular Array Rod Bundles (79-WA/FE-2) **F 354; (D) F 362**

#### **Secondary Parametric Amplification**

Amplitude Modulation of a Forced System by Parameter Variation (79-APM-8) **AM 191**

#### **Segmental Blockage**

Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow **F 200; (D) F 206; (AC) F 207**

#### **Segmented Lifelines**

Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) **PVT 10**

**Seireg, A.** Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**

#### **Seismic Analysis**

Dynamic Seismic Analysis of Long Segmented Lifelines (78-WA/PVP-4) **PVT 10**

#### **Seismic Environment**

A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **PVT 44**

#### **Seismic Response**

Effects of Soil-Structure Interaction on Seismic Response of a Steel Gravity Platform **ERT 171**

#### **Seismic Response Behavior**

Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) **PVT 21**

#### **Seismic Risk Analysis**

Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) **PVT 31**

#### **Seizure**

Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 419; (D) L 423**

**Seki, M.** Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity **HT 227**

**Seki, N.** Back-Melting of a Horizontal Cloudy Ice Layer with Radiative Heating **HT 90; Characteristics of**

Fluidization of a Solid Particle Bed **HT 386; Forced Convection Heat Transfer on Heated Bottom Surface of a Cavity **HT 475****

#### **Selected Ordinates**

Selected Ordinates for Total Solar Radiant Property Evaluation from Spectral Data **HT 101**

#### **Selective Precision Synthesis**

Selective Precision Synthesis of the Four-Bar Motion Generator With Prescribed Input Timing (78-WA/DE-2) **MD 614**

#### **Self-Excited Wobble**

Observation of Self-Excited Wobble in Face Seals (TB) **L 526**

#### **Semi-Submerged Concrete Hull**

Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**

#### **Semi-Transparent Solids**

Influence of Thermal Radiation on the Temperature Distribution in a Semi-Transparent Solid **HT 76**

#### **Semiscalc Core**

The Thermal-Hydraulic Phenomena Resulting in Early Critical Heat Flux and Rewet in the Semiscalc Core **HT 43**

#### **Semisubmersibles**

Semisubmersible Rig Motion Studies Offshore of Alaska and Southern California **ERT 182**

**Sengers, J. V.** Viscosity of Nitrogen near the Critical Point (Er) **HT 575; Viscosity of Nitrogen near the Critical Point (78-WA/HT-38) **HT 3****

**Seneo, V.** Experimental Investigation of Unsteady Phenomena in Vanesless Radial Diffusers (D) **P 59; (AC) P 60; Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D) P 39; (AC) P 40****

#### **Sensitivity Analysis**

Application of Sensitivity Analysis to Car-Trailer Stability (TB) **DS 272**

#### **Sensor Calibration**

The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**

**Seo, K.** The Elastic Field in a Half Space Due to Ellipsoidal Inclusions With Uniform Dilatational Eigenstrains (79-APM-29) **AM 568**

#### **Separated Flow**

Heat Transfer in an Axisymmetric Separated and Reattached Flow over a Longitudinal Blunt Circular Cylinder (Er) **HT 375**

REVIEW—Unsteady Boundary Layers, Separated and Attached **F 29**

#### **Separating Flows**

A Wall-Flow-Direction Probe for Use in Separating and Reattaching Flows **F 364**

#### **Separation**

An Integral Method for Calculating Turbulent Boundary Layer With Separation **F 110**

#### **Separator Contact Forces**

Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (78-Lub-35) **L 180; (D) (AC) L 188**

**Serag-Eldin, M. A.** Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**

**Sereny, A.** Experimental Investigation of Slider Gas Bearings With Ultra-Thin Films **L 510; Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $\Lambda > 300$ ) **L 64****

#### **Series Airtolls**

Application of Nonseries Airtoll Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

#### **Series-Connected Geneva Mechanisms**

General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**

#### **Series-Parallel Network**

Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) **MD 625**

#### **Series Solution**

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**

**Sernas, V.** Heat Transfer Correlation for Subcooled Water Films on Horizontal Tubes (TN) **HT 176**

**Server, W. L.** Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 168**

#### **Service Module**

Marine Spray—SM1A Propulsion Module (78-GT-58) **P 149**

#### **Servo-Controlled Joints**

Analysis of Massless Elastic Chains With Servo Controlled Joints **DS 187**

**Seth, B. B.** Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) **I 278**

**Sexton, R. W.** Erosion-Corrosion Effects on Boiler Tube Metals in a Multisolid Fluidized-Bed Combustor (77-WA/CD-1) **P 1; (D) P 7; (AC) P 8**

**Storza, P. M.** Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**

#### **Shaft Stresses**

A New Key and Keyway Design (78-WA/DE-7) **MD 338**

#### **Shaft Whirl Stability**

Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**

**Shah, J.** Squeeze Film Damping of Non-Newtonian Fluids **L 516**

**Shah, R. K.** Heat Transfer and Fluid Flow Analysis of Interrupted-Wall Channels, with Application to Heat Exchangers (D) **HT 188; (AC) HT 189**

**Shah, V. H.** Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

**Shahinian, P.** Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) (AC) **MT 176; Effect of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) **MT 224****

**Shahinpoor, M.** Free Energy of Granular Materials in Static Equilibrium (BN) **AM 944**

#### **Shaking Force**

Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 246**

#### **Shale Drilling**

A Study of Factors Influencing the Drillability of Shales: Single-Cutter Experiments with STRATAPAX® Drill Bits **ERT 189**

**Shamsundar, N.** A New Similarity Method for Analysis of Multi-Dimensional Solidification **HT 585**

**Shan, H. S.** Failure of Cemented Carbide Tools when Executing Intermittent Cuts (78-WA/PROD-17) **I 391**

**Shang, H. M.** Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/PROD-42) **I 341**

#### **Shape Factors**

Calculation of Shape Factors between Rings and Inverted Cones Sharing a Common Axis (D) (AC) **HT 189**

#### **Shape Parameters**

Effect of Nozzle Shape and Polymer Additives on Water Jet Appearance (77-FE-16) **F 304**

**Shapiro, A. B.** Optimal Control Concepts for the Characterization and Design of Highway Vehicle - Trailer Systems (78-WA/DSC-27) **DS 127**

**Shapiro, L. H.** Flatjack Methods of In-Situ Measurement of the Mechanical Properties of Sea Ice **Ex. 198**

**Sharbaugh, J. E.** A Recommended Design Approach for Breeder Reactor Cover Gas Seals (78-WA/NE-2) **P 647; The Value of Prototype Testing in the Development of the In-Vessel Handling Machine for FFTF (78-WA/NE-3) **P 651****

**Sharma, C. S.** Friction and Wear of Sintered Cast Iron Products **L 54**

**Sharpe, W. N., Jr.** The Residual Strain Distribution Around a Fastener Hole Coldworked With a Tube Expander (TB) **MT 304**

**Shaughnessy, E. J.** Small Reynolds Number Convection in Rotating Spherical Annuli **HT 427**

**Shaw, M. C.** Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) **I 104**

#### **Shear**

Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**

Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and a Torsion **BE 46; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53****

Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**

#### **Shear Angle**

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212; (D) (AC) L 218**

#### **Shear Curves**

Study of Polyphenyl Ether Fluid (SP4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**

## Shear Deformation

Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**

Elasticity of Plates and Refined Theory **AM 644**

Finite Element Analysis of Mindlin Plates (78-WA/DE-6) **MD 619**

## Shear Effects

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**

## Shear Fractures

An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**

## Shear Layers

Free Shear Layer Behavior in Rotating Systems **F 117; (D) (AC) F 120**

## Shear Strength Measurements

Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) **L 251; (D) (AC) L 257**

## Shear Stress

Experimental Study of Evaporation and Breakdown of Thin Liquid Films Driven by Shear Stresses (77-WA/HT-7) **HT 712**

## Shear Waves

Diffraction of SH-Waves by an Edge Crack **AM 101**

## Shear Zone

The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**

## Shearing Loads

Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

## Shearing Motion

The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) **AM 499**

## Sheet Metal

Deformation and Curvatures in Sheet-Metal in the Bulge Test (78-WA/PROD-42) **I 341**

Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**

## Sheet Molding Compounds (SMC)

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

## Sheets

On the Determination of Stresses, Displacements, and Stress-Intensity Factors in Edge-Cracked Sheets With Mixed Boundary Conditions **AM 611**

Sheets, H. E. Performance Prediction for an Axial Flow Hydraulic Transmission (78-WA/OCE-5) **I 434**

## Shell Models

A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**

A Shell Model of a Buried Pipe in a Seismic Environment (78-WA/PVP-7) **PVT 44**

## Shell Shapes

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

## Shell Structures

Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) **I 178**

## Shell-and-Tube Heat Exchanger

On Thermal Expansion Induced Stresses in U-Bends of Shell-and Tube Heat Exchangers (78-JPGC-NE-14) **P 634**

Two-Phase Flow on the Shell-Side of a Segmentally Baffled Shell-and-Tube Heat Exchanger (77-WA/HT-22) **HT 38**

## Shell Vibrations

Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**

## Shells

Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) **PVT 184**

Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression **AM 883**

Axisymmetric Torsional Vibration of Conical Shells (BN) **AM 609**

Bifurcation of Elastic-Plastic Circular Cylindrical Shells Under Internal Pressure **AM 889**

Buckling of Angle-Ply Laminated Circular Cylindrical Shells (BN) **AM 233**

Buckling of Shallow Spherical Shells—The Significance of the Pole Conditions (BN) **AM 710**

Dynamic Response of a Cylindrical Shell in a Potential Fluid (79-WA/APM-22) **AM 772**

Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell **AM 125**

Elastic and Elastic-Plastic Buckling of Internally Pressurized 2:1 Ellipsoidal Shells (ER) **PVT 12**

Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) **PVT 216**

Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) **PVT 235**

Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) **MD 322**

Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**

Plastic Collapse and the Controlling Failure Pressures of Thin 2:1 Ellipsoidal Shells Subjected to Internal Pressure **PVT 64**

Plastic Collapse of Thin Internally Pressurized Torispherical Shells **PVT 311**

Transient Response of Two Fluid-Coupled Cylindrical Elastic Shells into an Incident Pressure Pulse (79-WA/APM-15) **AM 513**

Vortex Motions Induced by V-Grooved Rotating Cylinders and Their Effect on Mixing Performance (79-FE-2) **F 186**

Sherby, O. D. Combining Phenomenology and Physics in Describing the High Temperature Mechanical Behavior of Crystalline Solids **MT 387**

Sheridan, R. (editor) Emerging Energy Technologies (BR) **JERT 206**

Shevchenko, R. P. Measurement of Separator Contact Forces in Ball Bearings Using a Derotation Prism (D) (AC) **L 188**

Shevchuk, G. J. Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**

Shieh, R. C. Eigensolutions for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**

## Shield Performance

Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**

Shienbob, L. T. Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 549**

Shimizu, M. Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet **HT 265**

Shindo, Y. Diffraction of Torsional Waves by a Flat Annular Crack in an Infinite Elastic Medium **AM 827**

Shinozuka, M. Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) **PVT 31**

Time-Domain Structural Responses Simulation in a Short-Crested Sea **ERT 270**

## Ship Propulsion

Performance Prediction for an Axial Flow Hydraulic Transmission (78-WA/OCE-5) **I 434**

Shladover, S. E. Vehicle-Follower Control for Dynamic Entrainment of Automated Guideway Transit Vehicles **DS 314**

## Shock Phenomena

A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 63**

## Shock Waves

Computed Dynamic Compaction of a Two-Layered Copper Powder Medium **MT 122**

Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) **AM 505**

## Short Cracks

Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

## Short-Crested Sea

Time-Domain Structural Response Simulation in a Short-Crested Sea **ERT 270**

## Short Flow Construction

Laminar Transport Phenomena in parallel Channels with a Short Flow Construction **HT 217**

Shrives, T. R. (author) Mechanical Failure—Definition of the Problem (GR) **MD 175**

## Shroud Pressure

Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33; (D) P 39; (AC) P 40**

Shuck, Z. (editor) Emerging Energy Technologies (BR) **JERT 206**

Shult, M. D. Buckling of Shallow Spherical Shells—The Significance of the Pole Conditions (BN) **AM 710**

Siddall, J. N. Frontiers of Optimal Design **MD 674**

Siddhanty, M. N. Higher Order, Planar Tangent-Line Envelope Curvature Theory (78-DET-21) **MD 563**

Sih, G. C. (editor) Stress Analysis of Notch Problems (BR) **AM 968**

## Silicone Rubber

Materials for Human Implantation **BE 2**

Silva, J. P. (author) Reliability, Maintainability, and Performance Issues in Hydraulic System Design (GR) **MD 174**

Silva, T. M. Die Temperatures During Production Drop Forging (78-WA/PROD-28) **I 385**

Silvestrini, R. Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) **P 598**

## Similarity Methods

A New Similarity Method for Analysis of Multi-Dimensional Solidification **HT 585**

## Similitude Law

Similitude Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) **I 278**

Simmonds, J. G. Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156**

Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (79-WA/APM-25) **AM 895**

Exact Equations for the Inextensional Deformation of Cantilevered Plates (79-WA/APM-11) **AM 631**

Simmons, G. W. Fatigue Crack Growth in 2¼-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**

Simon, S. R. A Gait Subsystem for Smoothing and Differentiation of Human Motion Data **BE 205**

Simpson, R. L. Performance Characteristics of a Simple Linearized Hot-Wire Anemometer **F 381**

Prediction of Incompressible Turbulent Separating Flow (D) **F 147; (AC) F 148**

## Simulated Atherosclerosis

Ultrasonic Assessment of Simulated Atherosclerosis: In-Vitro and In-Vivo Comparisons **BE 73**

## Simulated Geothermal Conditions

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**

## Simulation

Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**

Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 187**

Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) **MD 108**

Multi-Tool Machining Analysis—Part I: Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**

Numerical Solution of the Planar Hydrostatic Foil Bearing (78-Lub-23) **L 86**

Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) **I 223**

A Simulation of the Dynamics of Counterpulsation **BE 105**

## Simulation Models

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

## Simulation Synthesis

Simulation and Control Synthesis of Manipulator in Assembling Technical Parts **DS 332**

Sines, G. Innovative Design of Ceramic Utility Gas Turbines (D) **P 562**

Singh, K. P. Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9**

Part II: Applications (77-WA/NE-7) **P 16**

On Thermal Expansion Induced Stresses in U-Bends of Shell-and-Tube Heat Exchangers (78-JPGC-NE-14) **P 634**

Singh, S. P. Comparative Study of the Linear and Non-Linear Locomotive Response **DS 263**

Singh, V. K. Vibration Frequencies of a Twisted Uniform Blade with One End Spring Hinged and the Other Free (TB) **P 679**

## Single-Anchored Log System

A Unique Approach to the Offshore Gas Disposal Problem: Castellan SALS Production Facilities **ERT 210**

## Single Driving Pins

General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) **MD 438**

## Single-Elbow Flexible Piping System

Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**



**Sinha, S. C.** Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 203**

**Sink Flow**  
Symmetric Sink Flow Between Parallel Plates (Er) **F 390**

**Sintered Cast Iron Products**  
Friction and Wear of Sintered Cast Iron Products **L 54**

**Siato, F.** The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 162**

**Slack, J. A.** Nonlinear Wheelset Forces in Flange Contact—Part 1: Steady State Analysis and Numerical Results **DS 238**; Part 2: Measurements Using Dynamically Scaled Models **DS 247**

**Size Constraints**  
Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**

**Skateboards**  
Lateral Dynamics and Stability of the Skateboard **AM 831**

**Skeels, H. B.** Performance Prediction for an Axial Flow Hydraulic Transmission (78-WA/OCE-5) **I 434**

**Skeletal Muscle**  
A Quantitative Evaluation of the Frequency-Response Characteristics of Active Human Skeletal Muscle In Vivo **BE 28**

**Skew Four-Bar Mechanisms**  
On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) **MD 58**

**Skew-Symmetric Loading**  
The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/APM-16) **AM 618**

**Skin-Mounted Accelerometers**  
The Effect of Soft Tissue on Measurements of Vibrational Bone Motion by Skin-Mounted Accelerometers **BE 216**

**Skin Temperature**  
The Effect of Pressure on Skin Temperature Measurements for a Disk Sensor **BE 261**

**Skin Temperature Probe** **BE 232**  
Thermography as a Means of Blood Perfusion Measurement **BE 246**

**Skinkie, M. E.** An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145**; (D) **L 152**; (AC) **L 153**

**Slab**  
An Iterative Solution for Anisotropic Radiative Transfer in a Slab **HT 695**

**Slagging**  
The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) **P 500**

**Slender Tapered Beams**  
Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**; Part 2: Experiments (79-APM-4) **AM 52**

**Slide-Roll Ratio**  
A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio **MD 274**

**Slider Bearings**  
Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**

**Slider Gas Bearings**  
Experimental Investigation of Slider Gas Bearings With Ultra-Thin Films **L 510**

**Sliding Contacts**  
Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) **L 220**; (D) **L 229**; (AC) **L 230**

**Slip Boundary Conditions**  
Numerical Solution of Reynolds Equation With Slip Boundary Conditions for Cases of Large Bearing Number ( $A > 300$ ) **L 64**

**Sloping Plane**  
Sphere on Imperfectly Rough Sloping Plane (BN) **AM 713**

**Slot Injection**  
Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**

**Slug Flow**  
Pressure Pulse Propagation in Two-Component Slug Flow **F 44**

**Slug Flowing**  
The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

**Small Intestine**  
Fluid Mechanics of Longitudinal Contractions in the Small Intestine **BE 284**

**Small-Scale Electric Generation Systems**  
An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (76-WA/Ener-1) **P 213**

**Smith, C. R.** An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall in Plane-Wall Diffusers **F 181**

**Smith, C. W.** Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (D) (AC) **MT 58**

**Smith, D. A.** Topological Reaction Force Analysis (78-DET-58) **MD 192**

**Smith, F. W.** Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) **MT 12**

**Smith, K. N.** Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

**Smith, L. H., Jr.** An Axial Compressor-End-Wall Boundary Layer Calculation Method (D) **P 245**; (AC) **P 248**

**Smith, T. F.** Radiant Exchange for a Fin and Tube Solar Collector (TN) **HT 185**; Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) **HT 376**; Radiative Transfer in Hartmann MHD Flow (78-HT-16) **HT 502**

**Smyth, K. A.** Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**

**Smyth, R.** Turbulent Flow Over a Disk Normal to a Wall (79-WA/FE-7) **F 461**; Turbulent Flow Over a Plane Symmetric Sudden Expansion **F 348**

**Sneck, H. J.** Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (D) (AC) **L 348**

**Snider, D. M.** The Thermal-Hydraulic Phenomena Resulting in Early Critical Heat Flux and Rewet in the Semicore Core **HT 43**

**Snyder, R. G.** A Biomechanical Analysis of Head Impact Injuries to Children **BE 250**

**Sodium**  
Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-B-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

The Fatigue-Crack Propagation Response of Two Nickel-Base Alloys in a Liquid Sodium Environment (79-PVP-33) **MT 205**

Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**

**Sodium-Heated Steam Generator Tubes**  
Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**

**Soeda, T.** An Adaptive Control Policy of Discrete-Time Linear Systems With Random Parameters (TB) **DS 361**

**Soft Tissues**  
The Effect of Soft Tissue on Measurements of Vibrational Bone Motion by Skin-Mounted Accelerometers **BE 218**

Inversion of a Class of Nonlinear Stress-Strain Relationships of Biological Soft Tissues **BE 23**

**Software Development**  
Optimal Programming of Working Cycles for Industrial Robots **MD 250**

**Soil-Structure Interaction**  
Effects of Soil-Structure Interaction on Seismic Response of a Steel Gravity Platform **ERT 171**

**Soil Temperature Measurements**  
Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **ERT 225**

**Sokoloff, L.** A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water **BE 185**

**Solan, A.** Laminar Boundary Layer on a Finite Disk in a Rotating Compressible Isothermal Flow **F 166**; Laminar Compressible Flow Over a Stationary Disk in a Rotating Cylinder **F 173**

**Solar Collectors**  
Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**

Radiant Exchange for a Fin and Tube Solar Collector (TN) **HT 185**

**Solar Concentrators**  
Optimal Control of Sun Tracking Solar Concentrators **DS 157**

**Solar Energy**  
Back-Melting of a Horizontal Cloudy Ice Layer with Radiative Heating **HT 90**

**Solar Heating Systems**  
An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) **DS 138**

**Solar Radiation**  
Evaluation of Intergrating Sphere Surfaces for Infrared Pyrometers (TN) **HT 379**

Selected Ordinates for Total Solar Radiant Property Evaluation from Spectral Data **HT 101**

**Solar Thermal Systems**  
Optimal Control of Sun Tracking Solar Concentrators **DS 157**

**Solid-Gas Jet**  
Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (D) (AC) **F 147**

**Solid Lubricants**  
Friction and Wear of Sintered Cast Iron Products **L 54**

**Solid Particle Bed**  
Characteristics of Fluidization of a Solid Particle Bed **HT 366**

**Solid Particles**  
The Interaction of Solid or Liquid Particles and Turbulent Fluid Flow Fields—A Numerical Simulation **F 265**

**Solid Plate**  
Thin Disk On a Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 346**

**Solid Propellant Combustion**  
Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**

**Solid Properties**  
Effect of Solid Properties and Contact Angle in Dropwise Condensation and Evaporation **HT 48**

**Solid Wastes**  
Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) **P 592**

The Economics of Energy Recovery From Industrial Waste Incineration **ERT 260**; (D) **ERT 268**; (AC) **ERT 269**

The Relative Value of Energy Derived from Municipal Refuse **ERT 251**; (D) **ERT 255-258**; (AC) **ERT 258**

**Solidification**  
A New Similarity Method for Analysis of Multi-Dimensional Solidification **HT 585**

**Solidification Process**  
Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**

**Solidification Solution**  
Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**

**Solids**  
Combining Phenomenology and Physics in Describing the High Temperature Mechanical Behavior of Crystalline Solids **MT 387**

Consolidation in Transversely Isotropic Solids **AM 85**

Heat Transfer in Composite Solids with Heat Generation **HT 137**

Minimum Spacing of Thermally Induced Cracks in Brittle Solids (78-Pet-62) **ERT 34**

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/PROD-11) **I 311**

Uniqueness of Plane Strain Deformation of Rigid-Plastic Solids Under Lateral Pressure (BN) **AM 959**

Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids (BN) **AM 958**

**Solids Circulation**  
Solids Circulation in Turbulent Fluidized Beds and Heat Transfer to Immersed Tube Banks **HT 391**

**Solution Procedure**  
Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**

Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**

**Soni, A. H.** Dynamic Analysis of Spatial Mechanisms Using Dual Successive Screw Method and D'Alembert's Principle (78-DET-22) **MD 569**; Higher Order, Planar Tangent-Line Envelope Curvature Theory (78-DET-21) **MD 563**; A Survey of Cam Manufacture Methods (78-DET-65) **MD 455**; Technology Transfer in Biokinematics of the Human Spine (78-DET-86) **MD 594**

**Sonic Excitation**  
Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**

**Soong, T. C.** An Elastic Analysis of Multitroll Endless Web



- Systems **DS 308**
- Sound Pressure Level (SPL)**  
Mathematical Modelling of Textile Weave Room Sound Propagation (78-TeX-3) **I 89**
- Sound Speed**  
Elastic Dispersion, Homogeneous Dispersive Media and an Application to Periodic Elastic Media (D) (AC) **AM 236**
- Soundalgekar, V. M.** Effects of Mass Transfer and Free-Convection Currents on the Flow Past an Impulsively Started Vertical Plate **AM 757**
- Spalding, D. B.** Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**
- Spanos, P.-T. D.** Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) **DS 31**; Linearization Equations for Vibration Induced by Oscillatory Flow (BN) **AM 946**
- Spanwise Nonuniformity**  
Three-Dimensional Structure of a Nominally Planar Turbulent Boundary Layer **F 326**
- Spark-Ignition Engines**  
An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**
- Spark Timing Control**  
Closed Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (78-WA/DSC-15) **DS 64**; (D) **DS 69**; (AC) **DS 70**
- Sparrow, E. M.** Analysis of Turbulent Flow and Heat Transfer in Internally Finned Tubes and Annuli **HT 29**; Condensation on an Extended Surface **HT 434**; Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**; Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Flow **F 200**; (D) **F 206**; (AC) **F 207**; Flow through Successive Enlargement, Turning, and Contraction—Pressure and Fluid Flow Characteristics (TN) **HT 554**; Freezing Controlled by Natural Convection **HT 578**; Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube **HT 23**; Local and Average Heat Transfer Characteristics for Turbulent Airflow in an Asymmetrically Heated Tube **HT 635**; Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface **HT 211**; Melting about a Horizontal Row of Heating Cylinders (TN) **HT 732**; Natural Convection in a Ternary Gas Mixture—Application to the Naphthalene Sublimation Technique **HT 404**
- Spatial Linkages**  
Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504**; (D) (AC) **MD 507**
- Spatial Mechanisms**  
Displacement Analysis of Spatial 7R Mechanisms Suitable for Constant-Velocity Transmission Between Parallel Shafts (78-DET-9) **MD 604**
- Dynamic Analysis of Spatial Mechanisms Using Dual Successive Screw Method and D'Alembert's Principle (78-DET-22) **MD 569**
- Spatial Point Sets**  
Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**
- Spatial 7R Mechanism**  
Displacement Analysis of a Spatial 7R Mechanism—A Generalized Lobster's Arm (78-DET-10) **MD 224**
- Specimen Thickness**  
Effect of Specimen Thickness on Crack Growth Behavior in Alloy 718 Under Creep and Fatigue Conditions (D) (AC) **MT 176**
- Spectral Analysis**  
Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**
- Spectral Characteristics**  
Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**
- Spectral Data**  
Selected Ordinates for Total Solar Radiant Property Evaluation from Spectral Data **HT 101**
- Spectral Moments**  
Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) **L 409**; (D) (AC) **L 418**
- Specular Surfaces**  
Analysis of Diffuse-Specular Axisymmetric Surfaces with Application to Parabolic Reflectors (79-HT-22) **HT 689**
- Speed Governors**  
Compensation of the Speed Governor of a Water Turbine by the Method of Inequalities **DS 205**
- Spence, J.** A Note on the Gross Correction for Noncircular Inelastic Pipe Bends Under In-Plane Bending (TB) **PVT 102**
- Sphere Surfaces**  
Evaluation of Integrating Sphere Surfaces for Infrared Pyrometers (TN) **HT 379**
- Spheres**  
Chebyshev Approximations of Spatial Point Sets Using Spheres and Planes (78-DET-4) **MD 499**
- Diffuse Radiation View Factors from Differential Plane Sources to Spheres (TN) **HT 558**
- Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid (TN) **HT 566**
- On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**
- Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**
- Sphere on Imperfectly Rough Sloping Plane (BN) **AM 713**
- Torque Characteristics for Spherical Annulus Flow **F 284**
- Spherical Annuli**  
Small Reynolds Number Convection in Rotating Spherical Annuli **HT 427**
- Spherical Annulus Flow**  
Torque Characteristics for Spherical Annulus Flow **F 284**
- Spherical Crank-and-Rocker Linkages**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 26**
- Spherical Gas Bearings**  
Performance of Spherical Gas Bearings in Axisymmetric Operation (TB) **L 240**
- Spherical Pressure Vessels**  
Composite Spherical Pressure Vessels With Hardening Metal Liners (79-PVP-5) **PVT 200**
- Spinner Rotors**  
Dust-Trash Removal by the SRFCC Tuft-To-Yarn Processing System (78-TeX-2) **I 197**
- Spinning Plate**  
Resonant Excitation of a Spinning, Nutating Plate **AM 132**
- Spiral Grooved Bearings**  
Exact Two-Dimensional Analysis of Circular Disk Spiral Groove Bearing (Part I) **L 424**; (Part II) **L 431**
- Spitznagel, K. L.** Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 386**
- Spline Coupling**  
A Reliable Spline Coupling (78-WA/Aero-11) **I 421**
- Spray Distribution**  
Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles **I 171**
- Spray Nozzles**  
Drop-Size Distributions of Bingham Liquid (PAINT) Sprays Produced by Fan-Jet Pressure Nozzles **I 449**
- Sprays**  
Predictions of Induced Air Flows in Hollow Cone Sprays **F 312**
- Sprenger, G. S.** A Study of Oil/Water Separation in Corrugated Plate Separators (79-ENAS-26) **I 441**
- Sprevak, D.** A Technique for Compensating the Filter Performance by a Fictitious Noise (D) (AC) **DS 275**
- Spring Constants**  
Analysis and Simulation of Planar Mechanism Systems Using Bond Graphs (78-DET-2) **MD 167**
- Spring**  
Heat Setting Procedures for Helical Coiled Springs (GR) **MD 366**
- Squareness-Under-Load Testing and Buckling of Springs (TB) **MD 315**
- Spur Gears**  
Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**
- Squareness-Under-Load Testing**  
Squareness-Under-Load Testing and Buckling of Springs (TB) **MD 315**
- Squeeze Film Bearings**  
Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**
- Squeeze Film Damping**  
Squeeze Film Damping of Non-Newtonian Fluids **L 516**
- Squeeze Films**  
Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**
- Srinivasan, R.** A New Similarity Method for Analysis of Multi-Dimensional Solidification **HT 585**
- St. Lawrence Seaway**  
On the Prototype Testing and Computer Simulation of St. Lawrence Seaway Hydro-Mechanical Lock Gate Drives (78-DE-19) **MD 693**
- Stability**  
Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) **P 533**
- Application of Sensitivity Analysis to Car-Trailer Stability (TB) **DS 272**
- Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) **AM 9**
- Dynamic Response Testing of Gas Turbines (78-GT-31) **P 95**
- Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 1: Theory (79-APM-3) **AM 45**
- Dynamic Stability of Elastic Mechanisms (78-DET-17) **MD 149**
- Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**
- Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**
- The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**
- Guaranteed Asymptotic Stability for Some Linear Systems With Bounded Uncertainties **DS 212**
- The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) **AM 499**
- The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**
- Lateral Dynamics and Stability of the Skateboard **AM 931**
- Lateral Stability of Freight Cars With Axles Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**
- Nichtlineare Schwingungen (BR) **AM 238**
- Nonlinear Analysis of Rail Vehicle Forced Lateral Response and Stability **DS 230**
- Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (D) **AM 963**; (AC) **AM 964**
- Nucleation Processes in Large Scale Vapor Explosions **HT 289**
- Resonant Excitation of a Spinning, Nutating Plate **AM 132**
- A Simplified Stability Criterion for Nonconservative Systems (Er) **AM 719**
- The Stability of Blood Cell Suspensions to Small Disturbances in Circular Couette Flow: Experimental Results for the Taylor Problem **BE 289**
- Stability of Flow From a Nuclear Cavity (79-FE-5) **F 335**
- Stability of a Horizontal Porous Layer with Time-wise Periodic Boundary Conditions **HT 244**
- Stability of a Rotor Partially Filled With a Viscous Incompressible Fluid (79-WA/APM-28) **AM 913**
- Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) **AM 505**
- Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**
- Steering and Stability of Unsymmetric Articulated Railway Vehicles **DS 256**
- A Study of Penetrative Convection in Rotating Fluid **HT 261**
- A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) **L 242**
- Vibrations and Stability of Multiple Parameter Systems (BR) **AM 719**
- Stability Analysis**  
The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part II: Application and Experiment (78-DET-24) **MD 89**
- Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) **AM 31**
- Stability Boundaries**  
Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**
- Stability Criterion**  
On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion **HT 276**
- Stability Design Criterion**  
Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

### Stability Threshold

Stability Threshold of Flexibly Supported Hybrid Gas Journal Bearings L 451

### Stabilizing Effects

Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) P 23; (D) P 29; (AC) P 30

Stachew, J. L. History of Ocean Engineering Division of ASME ERT 154. Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) 1389; (D) 1376; (AC) 1377

### Stagnation Pressure

The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) P 61

### Stagnation Pressure Losses

A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow: Part II—Stagnation Pressure Losses in a Rectangular Elbow (79-WA/FE-5) F 423; (D) (AC) F 428

### Stainless Steel

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) MT 214

Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation MT 275

### Stainless Steel Wires

Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) MT 3

### Stainless Steels

Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation MT 154, Part II—Fatigue Crack Propagation MT 162

A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals MT 59

Fatigue Crack Growth of Stainless Steel Piping in a Pressurized Water Reactor Environment PVT 73

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach PVT 171

Materials for Human Implantation BE 2

### Stall

An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall in Plane-Wall Diffusers F 181

A Fundamental Criterion for the Application of Rotor Casing Treatment F 237

### Stall Control System

A Rotating Stall Control System for Turbojet Engines (78-GT-115) P 305; (D) P 313; (AC) P 314

### Stall Limit

An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) P 233; (D) P 245; (AC) P 248

Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) P 87

### Stand Off Distance

Prediction Equations Relating High Velocity Jet Cutting Performance to Stand Off Distance and Multipasses (78-WA/PROD-11) 1311

### Starved Conjunction

Elastohydrodynamic Lubrication of Elliptical Contacts for Materials of Low Elastic Modulus—II—Starved Conjunction (78-Lub-1) L 92

### Starved Porous Bearings

An Analytical Study of Starved Porous Bearings L 38

Steel, W. Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) HT 353

### State-of-the-Art

Gears MD 368. Power Transmissions MD 368

### State Estimation

Computational Techniques in Optimal State-Estimation—A Tutorial Review (78-WA/DSC-40) DS 99

Experience With Experimental Applications of Multivariable Computer Control DS 108

### State Space Method

A State Space Method for Optimal Design of Vibration Isolators MD 309

### State Variables

State Variables and Pseudo Bond Graphs for Compressible Thermofluid Systems DS 281

### State Vector Feedback

On the Optimal Digital State Vector Feedback Controller With Integral and Preview Actions DS 172

### Static Analysis

Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/PROD-3) 1295

### Static Behavior

Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs DS 58

### Static Equilibrium

Free Energy of Granular Materials in Static Equilibrium (BN) AM 944

### Static Force Analysis

Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) MD 99

### Static Fracture

The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel MT 258

### Static Methods

Experiments on Magnetoelastic Buckling in a Superconducting Torus AM 145

### Static Pressure

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) P 281

### Static Stall Angles

Water Tunnel Visualizations of Dynamic Stall F 376

### Static Work

Human Factors in Machine Design (78-DET-68) MD 537

### Stationary Configurations

Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) MD 504; (D) (AC) MD 507

### Stationary Linear Systems

Some Connections Between Modern and Classical Control Concepts DS 91

### Statistical

Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) L 409; (D) (AC) L 418

### Statistical Analysis

A Manual Approach to One-Dimensional Minimization (78-WA/DE-24) MD 355

### Statistical Concepts

Continuum Mechanical and Statistical Approaches in the Mechanics of Granular Materials (BT) AM 957

### Statistical Linearization

Nonlinear Analysis of Rail Vehicle Forced Lateral Response and Stability DS 230

### Statistical Methods

Statistical Methods for Creep, Fatigue and Fracture Data Analysis MT 344

Staub, F. W. Solids Circulation in Turbulent Fluidized Beds and Heat Transfer to Immersed Tube Banks HT 391

### Steadily Moving Load

A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) AM 175

### Steady State Bending Strain

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part II: Application and Experiment (78-DET-24) MD 89

### Steady-State Characteristics

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) L 190; (D) L 198; (AC) L 200

### Steady-State Solutions

Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) DS 31

A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) AM 175

### Steam

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) P 483

Fatigue Crack Growth in 2 1/4-Cr-1Mo-Steel Exposed to Hydrogen Containing Gases (79-PVP-102) MT 199

Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves PVT 113

Utilizing Geothermal Resources Below 150 C (300 F) ERT 124

### Steam Generator Tubes

Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes HT 270

### Steam Generators

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) P 130

Experimental Studies of Tube Fittings in Steam Generators and Heat Exchangers PVT 125

Influence of the Distribution of Mineral Matter in Coal on

Fireside Ash Deposition (78-WA/CD-4) P 506

### Steam Injection

Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) P 217

### Steam Power Plants

Water Production from Exhaust Gases of Steam Power Plants (TB) P 677

### Steam Piping

Economic Sizing of Steam Piping and Insulation (78-WA/Ener-9) 1427

### Steam Tubes

Erosion-Corrosion Effects on Boiler Tube Metals in a Multi-solids Fluidized-Bed Coal Combustor (77-WA/CD-1) P 1; (D) P 7; (AC) P 8

### Steam Turbines

The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) P 477

Stearman, R. R. Peristaltic Pumping by a Lateral Bending Wave BE 239

### Steel

The Effect of Loading Rate and Temperature on the Initiation of Fracture in a Mild, Rate-Sensitive Steel MT 258

Fatigue Crack Growth in 2 1/4-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) MT 199

The Influence of Inclusions on the Toughness and Fatigue Properties of A516-70 Steel MT 265

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) 1319

Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate MT 248

Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation MT 275

### Steel Beams

Modeling of Elastic-Plastic Bending of Beams Using a Roller Bending Machine (78-WA/PROD-6) 1304

### Steel Gravity Platform

Effects of Soil-Structure Interaction on Seismic Response of a Steel Gravity Platform ERT 171

### Steel Piping

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) P 471

### Steel Wheel

Similarity Law for the Creep-Adhesion Function in Dry Contact (78-WA/RT-6) 1278

### Steels

Effect of Metal Composition on Carburizing of Steels (TB) MT 173

Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses PVT 155

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach PVT 171

Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement MT 98

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) MT 47

The Strain-Rate and Temperature Dependence of 18Ni (359) Maraging Steel Tensile Properties MT 91

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) 1217

### Steering

Steering and Stability of Unsymmetric Articulated Railway Vehicles DS 256

### Stefan Problems

The Stefan Problem of a Polymorphous Material (79-WA/PM-29) AM 789

### Stenosed Human Arteries

Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations BE 89

### Stenosis Model

Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) BE 141; (D) BE 149; (AC) BE 150

### Step Changes

Calculation of a Turbulent Boundary Layer Downstream of a Step Change in Surface Temperature HT 144

### Step Expansion

Turbulent Flow Over a Plane Symmetric Sudden Expansion F 348

### Stereoscopic Instrumentation

Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) BE 124

Sternberg, A. Eigenfrequencies of Continuous Plates With Arbitrary Number of Equal Spans AM 656

### Stierpos, P.

Optimal Programming of Working Cycles for

- Industrial Robots** MD 250
- Svensen, E. N., Jr.** Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) MD 428; Optimum Synthesis of Mechanisms Using Heuristics for Decomposition and Search (D) (AC) MD 385
- Stewart, M. B.** Small Reynolds Number Electro-Hydrodynamic Flow Around Drops and the Resulting Deformation (79-WA/APM-8) AM 510
- Stewart, O. L.** Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) P 549
- Stiffer, A. K.** Amplitude Effects on the Dynamic Performance of Hydrostatic Gas Thrust Bearings L 437
- Stiffness**
- A Feedback Vibration Controller for Circular Saws DS 44
- Rolling Element Bearing Vibration Transfer Characteristics: Effect of Stiffness AM 677
- Stochastic Isotropic Surface**
- Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) I 185
- Stochastic Processes**
- Nonstationary Narrow-Band Response and First-Passage Probability (79-WA/APM-18) AM 919
- Stock, D. E.** Experimental Study of a Solid-Gas Jet Issuing Into a Transverse Stream (D) (AC) F 147
- Stoddard, F. J.** Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) P 275
- Stoddard, W. C. T.** A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors AM 120
- Stoker-Fired Boilers**
- Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) P 592
- Stokic, D.** Simulation and Control Synthesis of Manipulator in Assembling Technical Parts DS 332
- Stonesifer, R. B.** Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) PVT 148
- Storage Capacities**
- Optimizing Storage Capacities Within a Coal Preparation Facility by a Computer Simulation (78-WA/MH-4) I 223
- Storage Facilities**
- A Unique Approach to the Offshore Gas Disposal Problem: Castellon S&LS Production Facilities ERT 210
- Storage Facility**
- National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) ERT 82; Part II: Rock Mechanics Evaluation (78-Pet-64) ERT 87
- Storakers, B.** Yield Surface Characteristics Arising From Orthorhombic Symmetry (BN) AM 961
- Stowell, T. B.** An Experimental Investigation of the Effect of Misalignment and Directionality on the Performance of an Externally-Pressurized, Orifice-Compensated Air Journal Bearing L 28
- Stress**
- Abrasion of WC-Co Alloys by Quartz (78-Lub-19) L 208
- Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) L 220; (D) L 229; (AC) L 230
- Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) PVT 106
- Buckling of Rectangular Cross-Ply Laminated Plates With Nonlinear Stress-Strain Behavior AM 637
- A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) AM 97
- Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment PVT 142
- Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) PVT 149
- A Computer Program for Calculation of the Residual Stress Distribution and the Effective Stress Strain Curve of Cold-Formed Structural Members (GR) MD 174
- Consolidation of Inversely Isotropic Solids AM 65
- Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) P 320
- On the Determination of Stresses, Displacements, and Stress-Intensity Factors in Edge-Cracked Sheets With Mixed Boundary Conditions AM 611
- Effect of an Axisymmetric Imperfection on the Plastic Buckling of an Axially Compressed Cylindrical Shell AM 125
- The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/APM-16) AM 618
- Elastodynamics of Planar Mechanisms Using Planar Actual Finite Line Elements, Lumped Mass Systems, Matrix-Exponential Method, and the Method of "Critical-Geometry-Kineto-Elasto-Statics" (CGKES) (78-DET-26) MD 417
- Experimental Investigations of Prebuckled Cylinders Under External Pressure (78-WA/OCE-1) I 178
- Extrapolation of Strain and Stress From Holographically Measured Surface Displacement AM 581
- Failure of Inclined Boreholes (78-Pet-44) ERT 232
- Finite Elasticity Solutions Using Hybrid Finite Elements Based on a Complementary Energy Principle—Part 2: Incompressible Materials (79-APM-6) AM 71
- Fluid-Film Flows of Differential Fluids of Complexity n Dimensional Approach—Application to Lubrication Theory L 140
- Gravity Flow of Granular Materials in Conical Hoppers (79-WA/APM-20) AM 529
- Harmonic Holes for Nonconstant Fields (79-APM-30) AM 573
- A Hybrid Problem in Plane Elasticity (BN) AM 714
- An Interpolation Scheme for Plastic Yield Criteria (BN) AM 701
- Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant ERT 93
- Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) MD 392
- Note on Apex Singularities of a Wedge-Shaped Crack Under All Modes (BN) AM 705
- Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) F 251
- Penetration of a Half Space by a Rectangular Cylinder (79-WA/APM-3) AM 587
- Plane-Strain Buckling of a Crack in a Harmonic Solid Subjected to Crack-Parallel Compression (79-WA/APM-4) AM 597
- Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells ERT 99
- On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets (78-HT-21) HT 532
- The Pressure Ratio in the Theory of Bin Pressures (79-WA/APM-13) AM 524
- The Propagation of a Crack by a Rigid Wedge in an Infinite Power Law Viscoelastic Body (79-WA/APM-10) AM 605
- Reliability as Materials Property (78-WA/Mat-1) (D) MT 177
- Residual Thermal Stresses Due to Cool-Down of Epoxy-Resin Composites (79-WA/APM-9) AM 563
- Reverse Plastic Flow Associated With Plastic Indentation (78-WA/PROD-19) I 104
- A Review of Rail-Wheel Contact Stress Problem (GR) MD 175
- A Reynolds Stress Model for Flows With Drag Reduction F 158
- The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) AM 577
- Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing AM 83
- Thickness Oscillations in Deformed Elastic Plate AM 663
- A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction PVT 118
- Stress Analysis**
- The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) L 105
- Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes HT 270
- Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) MD 342
- Energy Variations in Notch Stress Analysis (BN) AM 952
- Formulas for Stress and Strain—5th Edition (BR) MD 173
- Inelastic Analysis of Nonaxisymmetrically Heated Thick Cylindrical Shells (79-PVP-8) PVT 235
- A New Key and Keyway Design (78-WA/DE-7) MD 338
- Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) ERT 105
- Stress Analysis of Notch Problems (BR) AM 968
- Stress Corrosion Cracking**
- The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) P 477
- Stress Distribution**
- An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) I 159
- Diametral Compressive Testing Method MT 139
- A Procedure for Axial Blade Optimization (78-WA/GT-15) P 315
- Stress Fields**
- Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part II: Applications (77-WA/NE-7) P 16
- Stress Gradients**
- A Stress Gradient Theory of Rock Fracture In Drilling ERT 46
- Stress Intensity**
- Application of J-Integral to High-Temperature Crack Propagation—Part II—Fatigue Crack Propagation MT 162
- 50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect MT 86
- Stress Intensity Factors**
- Acoustic Emission From a Brief Crack Propagation Event AM 107
- Diffraction of SH-Waves by an Edge Crack AM 101
- Fatigue Crack Growth Model for Part-Through Flaws in Plates and Pipes (78-Mat-5) MT 53; (D) (AC) MT 58
- Fatigue Crack Propagation of Short Cracks (78-Mat-7) MT 42
- Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) MT 34
- Part-Elliptical Cracks Emanating From Open and Loaded Holes in Plates (78-WA/Mat-4) MT 12
- The Problem of an Inclined Crack in an Orthotropic Strip AM 90
- A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) PVT 181
- Stress Levels**
- Fatigue Analysis of Offshore Structures ERT 218
- Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) P 9
- Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels MT 75
- Stress Models**
- Flow Stress Model in Metal Cutting (78-WA/PROD-27) I 403; (D) (AC) I 415
- Stress-Strain Curve**
- Analysis of Misalignment in the Tension Test MT 68
- Stress Ratio**
- Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach PVT 171
- Stress Rupture**
- Remaining Creep or Stress-Rupture Life Under Nonsteady Temperature and Stress MT 331
- Some Observations Regarding the Statistical Determination of Stress Rupture Regression Lines PVT 286
- Stress-State**
- The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) I 211
- Stress-Strain Rate Relations**
- Analytical Formulation of a Rate and Temperature Dependent Stress - Strain Relation MT 254
- Effects on Nonlinear Stress-Strain Rate Relation on Deformation and Fracture of Materials in Creep Range MT 369
- Stress-Strain Relationships**
- Inversion of a Class of Nonlinear Stress-Strain Relationships of Biological Soft Tissues BE 23
- Stress System**
- A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) P 450
- Stress Waves**
- Dynamic Fracture Initiation: A Comparison of Two Experimental Methods MT 168
- Stresses**
- Contractile Filament Stress in the Left Ventricle and its Relationship to Wall Stress BE 225
- Creep of Metals and Plastics Under Combined Stresses, A Review MT 365
- The Development of High Temperature Design Methods Based on Reference Stresses and Bounding Theorems MT 349
- On Thermal Expansion Induced Stresses in U-Bends of Shell-and-Tube Heat Exchangers (78-JPGC-NE-14) P 634
- Twisted-Pore Effect on Fluid Flow, Solid Deformation and Stress in a Poro-Elastic Cylinder AM 784
- Strada, J. A.** Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) P 533



## Straight Beams

Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**  
The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

## Strain

Viscoplasticity Based on Total Strain. The Modeling of Creep With Special Considerations of Initial Strain and Aging **MT 380**

## Strain-Energy Function

On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**

## Strain Hardening

A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**

Effects of Strain Hardening on Rock/Bit-Tooth Interaction (77-Pet-70) **ERT 53**

## Strain Range

Application of Damage Concepts to Predict Creep-Fatigue Failures (78-PVP-26) **MT 284**

## Strain Rate

The Strain-Rate and Temperature Dependence of 18Ni (350) Maraging Steel Tensile Properties **MT 91**

## Strain Solutions

Large Strain Solution for Pressurized Elasto/Plastic Tubes (BN) **AM 228**

Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**

## Straining

Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate **MT 248**

## Strains

The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

## STRATAPAX

Design, Fabrication and Field Test Performance of Slag-Type Diamond Compacts Oil Bits **ERT 41**

## STRATAPAX® Drill Blanks

A Study of Factors Influencing the Drillability of Shales: Single-Cutter Experiments with STRATAPAX® Drill Blanks **ERT 188**

## Strategic Crude Oil Storage

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**; Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**

## Stratification

Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid (TN) **HT 568**

## Stream Function

Inviscid Solution for the Problem of Free Overfall **AM 1**

## Streams

Experimental Study of a Solid-Gas Jet Issuing into a Transverse Stream (D) (AC) **F 147**

## Strength Anisotropy

On the Strength Anisotropy of Bone and Wood (79-WA/AM-21) **AM 832**

## Strength Assessment

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

## Strengthening Mechanisms

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**

Strenkowski, J. Transient Response of Continuous Viscoelastic Structural Members **AM 685**

## Stress Frequency

The Influence of Stress Frequency on the Fatigue Strength of Cortical Bone **BE 112**

## Stress Ratio

Effects of Stress Ratio and Hold-Time on Fatigue Crack Growth in Alloy 718 (79-PVP-84) **MT 224**

Strickland, J. H. A Vortex Model of the Darrieus Turbine: An Analytical and Experimental Study (79-WA/FE-6) **F 560**

## String Transportation

Lateral Motion of an Axially Moving String on a Cylindrical Guide Surface **AM 905**

Strong, R. T. Joint Displacements in Linkage Synthesis Solutions (78-DET-43) **MD 477**

## Structural Alloys

Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) **MT 191**

## Structural Analysis

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

Modal Superposition Method for Computationally Economical Nonlinear Structural Analysis (78-PVP-70) **PVT 134**

Structural Analysis of Kinematic Chains and Mechanisms Based on Matrix Representation (78-DET-29) **MD 488**

## Structural Behavior

Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part II: Applications (77-WA/NE-7) **P 16**

## Structural Components

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

## Structural Designs

Game Theory Approach in Multicriteria Optimization of Function Generating Mechanisms (78-DET-87) **MD 398**

Structural Design of a Superheater for a Central Solar Receiver (78-PVP-1) **PVT 2**

## Structural Element

Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**

## Structural Fires

Response of Building Components to Heating in a Fire **HT 365**

## Structural Joints

Nonlinear Thermoelastic Behavior of Structural Joints — Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/PROD-30) **I 345**

## Structural Materials

Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**

Reliability as a Materials Property (78-WA/Mat-1) **MT 27**

## Structural Members

Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) **P 9**

Use of Forming Limit Criteria in Forging Complex Shapes From Metal-Matrix Composites (78-WA/Mat-2) **MT 3**

## Structural Metals

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-PAM-1) **AM 58**

## Structural Optimization

The Influence of Cure Time Restrictions on Minimum-Weight Design of Double-Layer SMC Panels (78-WA/Mat-6) **MT 22**

## Structural Response Analysis

Comparison of ICEPEL Predictions With Single-Elbow Flexible Piping System Experiment **PVT 142**

## Structural Response Simulation

Time-Domain Structural Response Simulation in a Short-Crested Sea **ERT 270**

## Structural Stability

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**; Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**

## Structural Steels

Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 166**

## Structural Synthesis

Force System Structural Synthesis By Using Coupler Curves and Interactive Computer Graphics (78-DET-35) **MD 232**

Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**

## Structural System Design

Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 393**

## Structural Vibration

Resonant Excitation of a Spinning, Nutating Plate **AM 132**

Sturge, D. P. Stabilizing and Destabilizing Effects of Coriolis Force and Two-Dimensional Laminar and Turbulent Boundary Layers (D) **P 29**; (AC) **P 30**

## Subcooling

Heat Transfer Correlation for Subcooled Water Films on Horizontal Tubes (TN) **HT 178**

## Submerged Barrier

Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) **I 153**

## Submersible Cylindrical Shells

Plane Strain Solutions for Large Diameter Thick Submersible Cylindrical Shells **ERT 99**

## Subsonic Airfoils

On the Design of Thin Subsonic Airfoils **AM 6**

## Subsonic Turbulent Flow

Subsonic Turbulent Flow Past a Planar Fence **F 373**

## Subsonic V/STOL

Propulsion System Considerations for the Subsonic V/STOL (78-GT-57) **P 228**

## Subsonic V/STOL Aircraft

Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) **P 290**

## Subsonic V/STOL Design

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

## Substrates

Apparent Radiative Properties of an Isotropically Scattering Medium on a Diffuse Substrate **HT 68**

## Subsurface Temperatures

Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **ERT 225**

## Successive Regression

A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data **MT 317**

## Section Surface

Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

## Sudden Expansion

Turbulent Flow Over a Plane Symmetric Sudden Expansion **F 348**

Suganami, T. A Parametric Study of Journal Bearing Performance, The 80 Deg Partial Arc Bearing **L 486**; A Thermohydrodynamic Analysis of Journal Bearings **L 21**

Sugawara, M. Back-Melting of a Horizontal Cloudy Ice Layer with Radiative Heating **HT 90**

Suh, N. P. Vortex Motions Induced by V-Grooved Rotating Cylinders and Their Effect on Mixing Performance (79-FE-2) **F 188**

## Sulfidation Corrosion

Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**

Sullivan, J. A. Technology Transfer in Biokinematics of the Human Spine (78-DET-88) **MD 584**

## Sulphur Neutralization

Sulphur Neutralization by Lignite Ash: Pilot-Scale Combustion Experiments (78-WA/Fu-7) **P 615**; (D) (AC) **P 619**

## Sum Reduction

Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504**; (D) (AC) **MD 507**

Sun, D. C. A General Theory for Laminar Lubrication With Reynolds Roughness (D) **L 537**; (AC) **L 538**

## Sun Tracking

Optimal Control of Sun Tracking Solar Concentrators **DS 157**

Sundararajan, C. Fundamental Frequency of Beams With Elastic Rotational Restraints (TB) **MD 711**

Sundquist, M. J. The Effect of Gaseous Cavitation on Fluid Transients **F 79**

## Superconducting Ring

Bucking of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**

## Superconducting Torus

Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**

## Superconductive Magnetic Energy Storage

Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**

## Supercritical Helium

An Experimental Study of Thermally-Induced Flow Oscillations in Supercritical Helium **HT 9**

## Superheat Limits

Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures **HT 617**

## Superheaters

Structural Design of a Superheater for a Central Solar Receiver (78-WA/PVP-1) **PVT 2**

## Supersonic Boundary Layers

A Hybrid Marching Integration Procedure for the Prediction of Two-Dimensional Supersonic Boundary Layers (D) (AC) **F 400**

## Supersonic Cascades

Aeroelastic Stability Analysis of Supersonic Cascades (78-GT-151) **P 533**



### Supersonic Centrifugal Impeller

Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) P 33; (D) P 39; (AC) P 40

### Supersonic Transport Aircraft

Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) P 259

### Supersonic Two-Dimensional Cascade

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) P 431

### Supplementary Fuel

Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) P 592

### Supply Pressure

Analysis of Pneumatic Instability of Externally Pressurized Porous Gas Journal Bearings L 48

### Supraphysiological Temperatures

Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures BE 213

### Surface Area

On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion HT 276

### Surface Areas

Drop-Size Distributions of Newtonian Liquid Sprays Produced by Fan-Jet Pressure Nozzles I 171

### Surface Boundary Layers

Measurements Within Görtler Vortices F 517

### Surface Characteristics

A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio MD 274

### Surface Conditions

Harmonic Wave Propagation in a Periodically Layered, Infinite Elastic Body: Plane Strain, Analytical Results AM 113

### Surface Cooling

The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method HT 325

### Surface Corrosion

Hot Corrosion of Gas Turbine Components (78-GT-82) P 177

### Surface Cracked Round Bars

Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) MT 47

### Surface Cracks

A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner (TB) PVT 181

### Surface Curvature

Design Charts for Disk Cams with Reciprocating Radial Roller Followers (78-DET-36) MD 485

### Surface Deformation

Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) L 74

### Surface Displacement

Extrapolation of Strain and Stress From Holographically Measured Surface Displacement AM 581

A Fracture Surface Rotation Mechanism for Fatigue Tested 2219-T87 Aluminum Sheet MT 80

### Surface Distress

Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) L 171; (D) L 177; (AC) L 178

### Surface Evaluation

Evaluation of Interfering Sphere Surfaces for Infrared Pyrometers (TN) HT 379

### Surface Exploration

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) ERT 117

### Surface Fatigue Life

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) MD 373

### Surface Flow

Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (78-Lub-17) L 220; (D) L 229; (AC) L 230

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) P 450

An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) P 141

Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) HT 240

### Surface Geometries

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal Hig. Frequency Oscillations (78-Lub-5) L 145;

(D) L 152; (AC) L 153

### Surface Geometry

A Generalized Procedure for the Design and Optimization of Fluted Gregor Condensing Surfaces HT 335

### Surface Grains

Fatigue Crack Propagation of Short Cracks (78-Mat-7) MT 42

### Surface Grinding

Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) I 135; Part II: The Force Equilibrium I 141

### Surface Heat Balance

The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-86) ERT 240

### Surface Heat Flux

Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder HT 705

Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage HT 371

### Surface Heat Transfer

Eigenfunctions for Coupled Thermoelastic Vibrations of Timoshenko Beams AM 160

### Surface Impact Velocities

Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) ERT 167

### Surface Interruptions

Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface HT 211

### Surface Isotropy

Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) I 165

### Surface Layers

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) I 121

### Surface Materials

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) L 208

### Surface Measurements

Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) L 409; (D) (AC) L 418

Strongly Anisotropic Rough Surfaces (78-Lub-16) L 15

### Surface Melting

Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water HT 313

### Surface Pressure

The Analysis of Contact Stresses in Rolling Element Bearings (78-Lub-2) L 105

On the Design of Thin Subsonic Airfoils AM 6

### Surface Pressure Distribution

An Experimental Study of Flow Over a Rectangular Body (79-WA/FE-11) F 443

### Surface Radiative Exchange

Surface Radiative Exchange in Rod Bundles (TN) HT 378

### Surface Representation

Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) ERT 105

### Surface Roughness

Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed HT 397

A General Theory for Laminar Lubrication With Reynolds Roughness L 8

Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) MD 268

### Surface Strains

Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) AM 58

### Surface Structure

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) L 201; (D) L 206; (AC) L 207

### Surface Temperature

Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) I 191

Calculation of a Turbulent Boundary Layer Downstream of a Step Change in Surface Temperature HT 144

Convective Heat Transfer Augmentation in Thermal Entrance Regions by means of Thermal Instability HT 222

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) I 197

Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction HT 217

Solution of Anisotropic Problems of First Class by Coordinate-Transformation HT 340

Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet HT 265

### Surface Tension

Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed beneath a Heavier Immiscible Liquid (78-WA/HT-44) HT 318

### Surface Topographies

Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) MD 330

### Surface Wear

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) L 212; (D) (AC) L 218

### Surface Wetted Area

Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) HT 381

### Surge Behavior

First Order Pump Surge Behavior (D) F 530-531; (AC) F 531

### Surge Control

Reasons for Centrifugal Compressor Surging and Surge Control (78-GT-28) P 79

### Surgical Reconstructive Procedures

Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) BE 124

Surajmadja, J. B. (author) Introduction to Fluid Logic (BR) DS 63

### Suspensions

Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Lift and Guidance DS 217

Laminar Flow of Suspensions in the Entrance Region of a Diffuser (79-FE-8) F 300

Sussman, D. B. The Relative Value of Energy Derived From Municipal Refuse (D) ERT 256; (AC) ERT 259

Sutherland, G. H. On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) MD 47

Sutton, W. H. An Iterative Solution for Anisotropic Radiative Transfer in a Slab HT 605

Suzuki, H. Implosion Analysis of Concrete Cylindrical Vessels (TB) PVT 98

Swanson, S. R. A Stress Gradient Theory of Rock Fracture In Drilling ERT 46

Sweet, L. M. Nonlinear Wheelset Forces in Flange Contact—Part I: Steady State Analysis and Numerical Results DS 238; Part 2: Measurements Using Dynamically Scaled Models DS 247; Two-Dimensional Dynamics of Tracked Ram Air Cushion Vehicles With Fixed and Variable Winglets (79-WA/DSC-11) DS 321

Swieskowski, H. P. (author) Heat Setting Procedure for Helical Coiled Springs (GR) MD 366

### Swirl

Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl F 61

### Swirl Levels

Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) P 358

### Swirling Flow

Laminar Boundary Layer Swirling Flow with Heat and Mass Transfer in Conical Nozzles and Diffusers HT 151

Sy, S. H. (author) Aquatic Plant Harvesting—Development of High-Speed Harvesters and Processing and Utilization of Harvested Vegetation (GR) MD 368

### Symmetric Closures

A Compendium of Line-Symmetric Four-Bars (78-DET-14) MD 509

### Symmetric Root Locus

Some Connections Between Modern and Classical Control Concepts DS 91

### Symmetrical Algebraic Motions

Symmetrical Algebraic Motions in the Plane (78-DET-40) MD 15

### Symmetrical Velocity Profiles

Symmetrical Velocity Profiles for Jeffery-Hamel Flow (BN) AM 214

Symonds, P. S. Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) AM 58

### Synovial Lubricating Glycoprotein

A Proposed Model of Boundary Lubrication by Synovial Fluid: Structuring of Boundary Water BE 185

### Synthane Pilot Plant

Materials Problems Experienced at the Synthane Coal-Gasification Pilot Plant MT 105

### Synthesis Procedure

Optimization of Crank-and-Rocker Linkages with Size and

Transmission Constraints (78-DET-6) **MD 51**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **P 20**

#### Synthesis Technique

On Certain Least-Squares Synthesis Methods Misconceptions (78-DET-11) **MD 47**  
Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**  
Joint Displacement in Linkage Synthesis Solutions (78-DET-43) **MD 477**

#### Synthetic Fluid Fuels

The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 182**

#### System Coupler Link

Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 248**

#### System Design

The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

#### System Design Concept

Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) **P 259**

#### System Designer

Predicting Acoustical Noise Generation in Complex Mechanical Systems (78-DET-60) **MD 199**

#### System Development

The Relative Value of Energy Derived from Municipal Refuse **ERT 251; (D) ERT 255-258; (AC) ERT 258**

#### System Evaluation

AMSEC Users Guide (GR) **MD 174**

#### System Frequency

On Some General Properties of Combined Dynamical Systems (78-WA/APM-26) **AM 206**

#### System Misalignment

Analysis of Misalignment in the Tension Test **MT 68**

#### System Parameters

Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) **AM 203**

A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**

#### System Reliability

Reliability Analysis and Design of Epicyclic Gear Trains (78-WA/DE-10) **MD 825**

#### System Solutions

Graphical Solutions for the Characteristic Roots of the First Order Linear Differential-Difference Equation (78-WA/DSC-31) **DS 37**

Szeri, A. Z. A Parametric Study of Journal Bearing Performance: The 80 Deg Partial Arc Bearing **L 488; A Thermohydrodynamic Analysis of Journal Bearings **L 21****

## T

#### T Sections

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **I 319**

Taat, M. A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 63**

Tacey, R. K. (author) A Computer Program for Calculation of the Residual Stress Distribution and the Effective Stress - Strain Curve of Cold-Formed Structural Members (GR) **MD 174**

Tage, Y. Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) **L 201; (D) L 208; (AC) L 207**

Taghavi-Tafreshi, K. Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**

#### Tail Rotor

Preliminary Design Study of an Integrated Tail Rotor Servo Power Module (GR) **MD 366**

Taira, S. Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154; Part II—Fatigue Crack Propagation **MT 162; Effects of Nonlinear Stress-Strain Rate Relation on Deformation and Fracture of Materials in Creep Range **MT 369******

Taiwo, O. Design of Multivariable Controllers for an Advanced Turbofan Engine by Zakian's Method of Inequalities **DS 299**

Takada, S. Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) **PVT 31**

Takahara, K. Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**

Takahashi, N. Reliability Analysis of Parallel Manufacturing Systems with Two Machines (78-WA/PROD-8) **I 250**

Takahashi, Y. The Impact of LSI Technology on Control Engineering (F) **DS 6**

Takase, H. Effects of Particle-Size and Temperature Difference on Mist Flow over a Heated Circular Cylinder **HT 705**

Takeuchi, E. Friction and Wear of Sintered Cast Iron Products **L 54**

Takeuchi, D. I. Heat Transfer Characteristics for Inline and Staggered Arrays of Circular Jets with Crossflow of Spent Air **HT 526**

Talbot, J. E. Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) **P 259**

Tall, W. A. Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

Tallian, T. E. Filtration Effects on Ball Bearing Life and Conditions in a Contaminated Lubricant (D) (AC) **L 178**

Tamura, H. A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio **MD 274**

Tanaka, E. Axisymmetric Creep Buckling of Circular Cylindrical Shells in Axial Compression **AM 883**

Tanaka, H. Further Developments of Dropwise Condensation Theory **HT 603**

Tanaka, Y. Construction of Three-Workpiece Lapping Process (78-WA/PROD-7) **I 255**

#### Tandem Fan Design

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

#### Tangent-Line Curvature Theory

Higher Order, Planar Tangent-Line Envelope Curvature Theory (78-DET-21) **MD 583**

#### Tangential Circular Arcs

Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**

#### Tangential Slot Injection

Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**

Tani, J. Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

Tao, D. C. Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**

Tao, L. N. The Stefan Problem of a Polymorphous Material (79-WA/APM-29) **AM 789**

#### Tapered Beams

Dynamics of Slender Tapered Beams With Internal and External Axial Flow—Part 1: Theory (79-APM-3) **AM 45; Part 2: Experiments (79-APM-4) **AM 52****

#### Tapered Columns

Optimum Linear Tapering in the Design of Columns (BN) **AM 956**

Tapia, R. R. Amplitude Effects on the Dynamic Performance of Hydrostatic Gas Thrust Bearings **L 437**

Taylor, C. M. Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231; (D) L 238; (AC) L 239; (editor) Numerical Methods in Laminar and Turbulent Flows (BR) **AM 987****

Taylor, J. J. Effect of Nozzle Shape and Polymer Additives on Water Jet Appearance (77-FE-16) **F 304**

Taylor, R. L. (reviewer) The Numerical Treatment of Integral Equations (BR) **AM 969**

#### Technical Briefs

An Adaptive Control Policy of Discrete-Time Linear Systems With Random Parameters **DS 361**

Application of Sensitivity Analysis to Car-Trailer Stability **DS 272**

Average Nusselt Numbers for External Flows **HT 734**

Basic Design Concepts of Laminar Fluidic Digital Logic Elements Using Laminar Proportional Amplifiers With Positive Feedback (78-WA/DSC-3) **DS 77**

Centrifugal Effects in Hydrostatic Porous Thrust Bearing **L 381**

Correlations for Natural Convection through High L/D Rectangular Cells **HT 741**

Corrosion Under Random Exposure Conditions **MT 306**  
Effect of Metal Composition on Carburizing of Steels **MT 173**

Finite-Difference Solution of Free Convection Problem with Non-uniform Gravity **HT 745**

Free Convection Heat Transfer from Heated Cylinders Immersed in a Shallow Water Layer **HT 743**

Fundamental Frequency of Beams With Elastic Rotational Restraints **MD 711**

Geometric Modeling of the Human Left Ventricle **BE 221**

Heat Transfer Characteristics of a Porous Thrust Bearing **L 531**

Implosion Analysis of Concrete Cylindrical Vessels **PVT 98**

Isothermal Hydrodynamic Lubrication in Hydrostatic Extrusion of a Work-Hardening Material **L 386**

Melting about a Horizontal Row of Heating Cylinders **HT 732**

A Note on the Gross Correction for Noncircular Inelastic Pipe Bends Under In-Plane Bending **PVT 102**

Performance of Spherical Gas Bearings in Axisymmetric Operation **L 240**

On Pipeline Bending at the Seabed **ERT 203**

A Procedure for Estimating the Stress Intensity Factor of a Flattened Surface Crack at a Nozzle Corner **PVT 181**

A Reassessment of Grashof's Criterion **MD 515**

The Residual Strain Distribution Around a Fastener Hole Coldworked With a Tube Expander **MT 384**

A Simple Differential Approximation for Radiative Transfer in Non-Gray Gases **HT 735**

A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media **HT 736**

Squareness-Under-Load Testing and Buckling of Springs **MD 315**

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads **PVT 178**

Strongly Implicit Algorithms for Use in Three-Dimensional Natural Convection Studies **HT 739**

The Validity of Some Approximate Solutions to Reynolds Equation **L 385**

Vibration Frequencies of a Twisted Uniform Blade with One End Spring Hinged and the Other Free **P 479**

Water Production from Exhaust Gases of Steam Power Plants **P 677**

#### Technical Notes

Correlation of Burnout Data for Disk Heaters Cooled by Liquid **HT 383**

Diffuse Radiation View Factors from Differential Plane Sources to Spheres **HT 558**

Evaluation of Intergrating Sphere Surfaces for Infrared Pyrometers **HT 379**

Fin Thickness for an Optimized Natural Convection Array of Rectangular Fins **HT 564**

Flow through Successive Enlargement, Turning, and Contraction—Pressure and Fluid Flow Characteristics **HT 554**

Laminar Free Convection in Small Aspect Ratio Rectangular Enclosures with Isothermal Boundary Conditions **HT 568**

Mechanism of Heat and Momentum Transfer of Combined Free and Forced Convection with Opposing Flow **HT 573**

Method for Visualizing High Prandtl Number Heat Convection **HT 571**

Natural Convection from Spheres and Cylinders Immersed in a Thermally Stratified Fluid **HT 586**

A Note on Thermal Convection in a Saturated, Heat-Generating Porous Layer **HT 189**

Radiative and Convective Transfer for Real Gas Flow Through a Tube with Specified Wall Heat Flux **HT 376**

Shielding of Heat Transfer from a Boundary **HT 560**

Surface Radiative Exchange in Rod Bundles **HT 378**

Surface Wetted Area during Transition Boiling in Forced Convective Flow **HT 361**

Triangular Fin Performance by the Heat Balance Integral Method **HT 582**

Two-Dimensional Scattering from a Medium of Finite Thickness **HT 556**

#### Technical Parts Assembly

Simulation and Control Synthesis of Manipulator in Assembling Technical Parts **DS 332**

#### Technology

Advanced Overrunning Clutch Technology (GR) **MD 386**

## Technology Transfer

Technology Transfer in Biokinematics of the Human Spine (78-DET-88) **MD 594**

Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**

Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 125**

## Tee Intersections

Approximate Prediction of Hoop Stresses at Major Sections of Tee Intersections of Cylindrical Shells Subjected to Internal Pressure (79-PVP-1) **PVT 185**

Telionis, D. P. REVIEW—Unsteady Boundary Layers, Separated and Attached **F 29**

Tell, E. N. Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures **BE 213**

## Temper Embrittlement

Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement **MT 98**

## Temperature Analysis

Computation of Residual Stresses due to Multipass Welds in Piping Systems (78-PVP-104) **PVT 149**

## Temperature Conditions

Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**

The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**

## Temperature Curves

Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**

## Temperature Data

Study of Polyphenyl Ether Fluid (5P4E) in Operating Elastohydrodynamic Contacts by Infrared Emission Spectroscopy (78-Lub-21) **L 67**

## Temperature Dependence

The Strain-Rate and Temperature Dependence of 18Ni(350) Maraging Steel Tensile Properties **MT 91**

## Temperature Differences

Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage **HT 371**

Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**

## Temperature Distributions

Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 205**

A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**

Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 29**

Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 298**

Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) **P 101**

Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) **HT 353**

Influence of Thermal Radiation on the Temperature Distribution in a Semi-Transparent Solid **HT 78**

Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface **HT 211**

Measurements of Temperature Distributions at Electro-Surgical Dispersive Electrode Sites **BE 66**

Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity **HT 227**

On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction **P 459**

The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**

Transient Temperature Distributions in an Infinite, Perfused Medium due to a Time-Dependent, Spherical Heat Source **BE 62**

## Temperature Effect

Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**

On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow **HT 286**

A Study of Penetrative Convection in Rotating Fluid **HT 261**

## Temperature Effects Data

Frequency Effects in the Elevated Temperature Crack Growth Behavior of Austenitic Stainless Steels—A Design Approach **PVT 171**

## Temperature Environment

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

## Temperature Fatigue

Application of J-Integral to High-Temperature Crack Propagation—Part II—Fatigue Crack Propagation **MT 162**

## Temperature Field

A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**

Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 340**

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

## Temperature Fluctuations

Structure of Turbulent Velocity and Temperature Fluctuations in Fully Developed Pipe Flow **HT 15**

## Temperature Gradients

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**

An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

## Temperature Jump

Longitudinal Heat Propagation in Three-Phase Laminated Composites at Low Exciting Frequencies (79-WA/APM-2) **AM 557**

## Temperature Level

Nucleation Processes in Large Scale Vapor Explosions **HT 280**

## Temperature Measurement

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

On the Nature of Jets Entering a Turbulent Flow Part B—Film Cooling Performance **P 466**

## Temperature Parametric Method

Developments in Parametric Methods for Handling Creep and Creep-Rupture Data **MT 326**

## Temperature Probe

Skin Temperature Probe **BE 232**

## Temperature Profiles

Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**

Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**

Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction **HT 217**

Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**

Stability of a Horizontal Porous Layer with Time-wise Periodic Boundary Conditions **HT 244**

## Temperature Ranges

The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 325**

Dynamic Fracture Initiation: A Comparison of Two Experimental Methods **MT 168**

Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range **HT 331**

Hot Corrosion of Gas Turbine Components (78-GT-82) **P 177**

A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 270**

Velocity Profiles Near a Vertical Ice Surface Melting into Fresh Water **HT 313**

## Temperature Resources

Utilizing Geothermal Resources Below 150°C (300°F) **ERT 124**

## Temperature Separation

Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 380**

## Temperature Sources

Electrical Production from Moderate Temperature Geothermal Brines **ERT 134**

## Temperature Transients

Blood Perfusion Measurements by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 58**

## Temperature Variations

A Procedure for Axial Blade Optimization (78-WA/GT-15) **P 315**

Theoretical and Experimental Determination of the Dynamic

Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129**; (D) **L 137**; (AC) **L 138**

Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**

## Tempering Temperature

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**

## Temporal Characteristics

Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations **BE 89**

ten Napel, W. E. Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (D) **L 137**; (AC) **L 138**

## Tensile Ductility

The Influence of Inclusions on the Toughness and Fatigue Properties of A516-70 Steel **MT 265**

## Tensile Failure

Failure of Inclined Boreholes (78-Pet-44) **ERT 232**

## Tensile Loads

Application of J-Integral to High-Temperature Crack Propagation—Part I—Creep Crack Propagation **MT 154**

## Tensile Properties

The Strain-Rate and Temperature Dependence of 18Ni(350) Maraging Steel Tensile Properties **MT 91**

## Tensile Strength

Diametral Compressive Testing Method **MT 130**

Low-Cycle Fatigue and Ultimate Strength Related to Gear Design (77-DET-66) **MD 373**

## Tensile Stress

An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**

Consolidation in Transverse Isotropic Solids **AM 85**

A New Key and Keyway Design (78-WA/DE-7) **MD 338**

## Tensile Tests

Analysis of Misalignment in the Tension Test **MT 88**

Influence of Microstructural Inhomogeneity on the Formability and Fracture of a Carbon Steel (78-WA/Mat-3) **MT 18**

## Tension

A Closed Crack Tip Terminating at an Interface (78-WA/APM-26) **AM 97**

On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations **AM 78**

The Problem of an Inclined Crack in an Orthotropic Strip **AM 90**

Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**

The Temperature Dependence of Surface Tension of Pure Fluids (Er) **HT 576**

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

## Tension Fields

Waves From Suddenly Punched Hole in Plate Subjected to Uniaxial Tension Field (79-WA/APM-32) **AM 673**

## Tension-Roller-Leveling Process

The Tension-Roller-Leveling Process—Elongation and Power Loss (78-WA/PROD-18) **I 269**

## Tension Stiffness

Experiments on Magnetoelastic Buckling in a Superconducting Torus **AM 145**

## Tensionless Winkler Foundation

A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**

## Tenter Frame Dryer

A scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) **I 80**

Topou, I. Compressibility Effects in Cavity Flows **F 53**

## Ternary Gas Mixtures

Natural Convection in a Ternary Gas Mixture—Application to the Naphthalene Sublimation Technique **HT 404**

Tesar, D. Multiparametric Optimization of Four-Bar Linkages (78-DET-7) **MD 388**; A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) **MD 63**; Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 246**

Test, F. L. An Experimental Study of Flow Over a Rectangular Body (79-WA/FE-11) **F 443**

## Test Site Operational Experience

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397**; (D) **P 404**

## Test Systems

A Microprocessor-Controlled Test System Utilizing Relevant Component Duty Cycles (78-DE-W-6) **MD 656**



- Tevsawerk, J. L.** The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) **L 266**; (D) **L 273**; (AC) **L 274**. A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (D) **L 264, 265**; (AC) **L 265**
- Textile Machinery**  
Textile Machinery Research 1948-1978 (78-Tex-8) **I 45**
- Textile Processing**  
Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) **I 197**
- Textiles**  
Mathematical Modelling of Textile Weave Room Sound Propagation (78-Tex-3) **I 69**  
A Scheme to Assist in the Evaluation of Tenter Frame Dryer Performance (78-Tex-4) **I 60**
- Thé, J. H. L.** The Stress-State in the Shear Zone During Steady State Machining (78-WA/PROD-10) **I 211**
- Theoretical Analysis**  
Combined Heat and Mass Transfer in Regenerators with Hygroscopic Materials **HT 295**  
Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**
- Theoretical Investigation**  
Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) **AM 45**
- Theoretical Mechanics**  
Foundations of Theoretical Mechanics (BR) **AM 718**
- Theoretical Model**  
Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**  
Dynamics of Flexible Cylinders in Axisymmetrically Confined Axial Flow (78-WA/APM-24) **AM 37**  
Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 120**
- Theoretical Parameters**  
Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**
- Theoretical Predictions**  
Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions **HT 306**
- Theoretical Results**  
The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**
- Theoretical Study**  
Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**
- Thermal Analysis**  
Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**
- Thermal Atmosphere**  
Response of Building Components to Heating in a Fire **HT 355**
- Thermal Boundary Condition**  
An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 197**
- Thermal Boundary Layer**  
On the Nature of Jets Entering A Turbulent Flow: Part A—Jet-Mainstream Interaction **P 459**  
Nucleation Processes in Large Scale Vapor Explosions **HT 280**
- Thermal Conduction**  
Techniques for Reducing Thermal Conduction and Natural Convection Heat Losses in Annular Receiver Geometries **HT 106**
- Thermal Contraction**  
Solidification of a Sphere: The Effects of Thermal Contraction and Density Change Upon Freezing **AM 83**
- Thermal Control**  
Atmospheric Cloud Physics Laboratory Thermal Control (78-ENAS-9) **I 191**
- Thermal Convection**  
A Note on Thermal Convection in a Saturated, Heat-Generating Porous Layer (TN) **HT 169**
- Thermal Cracking**  
An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**
- Thermal Deformations**  
Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/PROD-31) **I 355**  
Nonlinear Thermoelastic Behavior of Structural Joints — Solution to a Missing Link for Prediction of Thermal
- Deformation of Machine Tools (78-WA/PROD-30) **I 348**  
Seizure of Eccentrically Loaded Journal Bearings and Sealing Rings (78-Lub-7) **L 419**; (D) **L 423**
- Thermal Differences Power Plant**  
Limit Analysis and Design of a Semi-Submerged Concrete Hull for an Ocean Thermal Differences Power Plant **ERT 93**
- Thermal Efficiency**  
Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**
- Thermal Entrance Regions**  
Convective Heat Transfer Augmentation in Thermal Entrance Regions by Means of Thermal Instability **HT 222**
- Thermal Expansion**  
On Thermal Expansion Induced Stresses in U-Bends of Shell-and-Tube Heat Exchangers (78-JPGC-NE-14) **P 634**
- Thermal Gradients**  
Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures **HT 238**  
A Study of Chemical Reactivity in Ceramic Heat Exchangers (78-GT-118) **P 276**
- Thermal History Determination**  
The Determination of the Thermal History in a One-Dimensional Freezing System by a Perturbation Method **HT 328**
- Thermal-Hydraulic Phenomena**  
The Thermal-Hydraulic Phenomena Resulting in Early Critical Heat Flux and Rewet in the Semicore Core **HT 43**
- Thermal Performance Verification**  
Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **ERT 225**
- Thermal Phenomena**  
Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) **HT 318**
- Thermal Plumes**  
Potential Weather Modification Caused by Waste Heat Release from Large Dry Cooling Towers **HT 164**  
Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) **HT 249**
- Thermal Process**  
Thin Disk On A Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 346**
- Thermal Protection System**  
The Surface Heat Balance in Simulations of Permafrost Behavior (75-WA/HT-96) **ERT 240**
- Thermal Radiation**  
Influence of Thermal Radiation on the Temperature Distribution in a Semi-Transparent Solid **HT 76**
- Thermal Response**  
Capabilities to Determine Rock Properties at Simulated Geothermal Conditions (78-Pet-31) **ERT 117**
- Thermal Stability**  
Alternative Aircraft Fuels (78-GT-59) **P 155**
- Thermal Storage**  
Periodic Thermal Storage: The Regenerator **HT 726**
- Thermal Stresses**  
Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**
- Thermal Systems**  
Time Optimum Control of a Two Capacity Thermal Environmental System With Louvers **DS 150**
- Thermal Taper**  
Optical Analysis of Porous Metal Bearings (78-Lub-29) **L 95**
- Thermal Transients**  
An Analysis of the Rupture Behavior of Pressurized Fast Reactor Cladding Tubes Subjected to Thermal Transients **MT 293**
- Thermistor Probe Techniques**  
Transient Temperature Distributions in an Infinite, Perfused Medium due to a Time-Dependent, Spherical Heat Source **BE 82**
- Thermocouple Probe**  
Blood Perfusion Measurement by the Analysis of the Heated Thermocouple Probe's Temperature Transients **BE 58**
- Thermodynamic Performance**  
Electrical Production From Moderate Temperature Geothermal Brines **ERT 134**
- Thermoelastic Behavior**  
Computer Simulation of Nonlinear Thermoelastic Behavior of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/PROD-31) **I 355**  
Nonlinear Thermoelastic Behavior of Structural Joints — Solution to a Missing Link for Prediction of Thermal
- of a Joint in Machine Tool Structure and its Effect on Thermal Deformation (78-WA/PROD-31) **I 355**  
Nonlinear Thermoelastic Behavior of Structural Joints — Solution to a Missing Link for Prediction of Thermal Deformation of Machine Tools (78-WA/PROD-30) **I 348**
- Thermoelastic Contact**  
On the Barber Boundary Conditions for Thermoelastic Contact (79-WA/APM-33) **AM 849**  
Thermoelastic Contact Between Bodies With Wavy Surfaces (79-WA/APM-35) **AM 854**
- Thermoelastic Effects**  
Experimental Studies on Thermoelastic Effects in Hydrodynamically Lubricated Face Seals (78-Lub-11) **L 275**; (D) (AC) **L 282**
- Thermoelastic Vibrations**  
Eigenvalues for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**
- Thermofluid Systems**  
State Variables and Pseudo Bond Graphs for Compressible Thermofluid Systems **DS 201**
- Thermography**  
Thermography as a Means of Blood Perfusion Measurement **BE 246**
- Thermohydrodynamic Analysis**  
A Thermohydrodynamic Analysis of Journal Bearings **L 21**
- Thermohydrodynamic Lubrication**  
A Parametric Study of Journal Bearing Performance: The 80 Deg Partial Arc Bearing **L 486**
- Thermophoresis**  
Thermophoresis—Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) **P 542**; (D) **P 546**; (AC) **P 547**
- Thermosyphons**  
Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**  
Open-Loop Thermosyphons with Geological Applications (79-HT-64) **HT 677**  
The Transient and Stability Behavior of a Natural Convection Loop **HT 684**
- Thibodeaux, D. P.** Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) **I 197**
- Thickness Defects**  
Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**
- Thin Disk**  
Thin Disk On A Convectively Cooled Plate—Application To Heat Flux Measurement Errors **HT 346**
- Thin Subsonic Airfoils**  
On the Design of Thin Subsonic Airfoils **AM 6**
- Thiruvavudchelvan, S.** Isothermal Hydrodynamic Lubrication in Hydrostatic Extrusion of a Work-Hardening Material (TB) **L 396**
- Thomas, E. S.** On a Class of Modes Defined by Rosenberg (BN) **AM 703**
- Thomas H. P.** Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) **ERT 120**
- Thomas, T. R.** Measurements of the Statistical Microgeometry of Engineering Surfaces (78-Lub-15) **L 409**; (D) (AC) **L 418**
- Thompson, D. A.** Design, Fabrication and Field Test Performance of Slug-Type Diamond Compacts Oil Bits **ERT 41**
- Thompson, L.** Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves **PVT 113**
- Thompson, M.** Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) **ERT 105**
- Thompson, R. E.** Corrosion and Fouling Potential in Diesel Exhausts (78-WA/Fu-5) **P 598**
- Thornton, P. C.** Effect of Metal Composition on Carburizing of Steels (TB) **MT 173**
- Thornton, W. A.** Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**
- Three-Dimensional Duct Flow**  
A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow, Part 1 — Inviscid Flow Considerations (79-WA/FE-4) **F 415**
- Three-Dimensional Gas Turbine Flows**  
Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) **P 326**
- Three-Dimensional Roll Cells**  
A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries **HT 233**



### Three-Dimensional Stress Analysis

Solving Three-Dimensional Stress Analysis Problems by a Surface Representation Alone (78-Pet-77) **EHT 105**

### Three-Dimensional Structures

Three-Dimensional Structure of a Nominally Planar Turbulent Boundary Layer **F 326**

### Three-Precision-Point-Dyad Synthesis

On the Existence of Circle-Point and Center-Point for Three-Precision-Point-Dyad Synthesis (78-DET-44) **MD 554**

### Three-Workpiece Lapping

Construction of Three-Workpiece Lapping Process (78-WA/PROD-7) **I 255**

### Threshold Stress Intensity Factors

Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

### Throttling Valve

Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/PROD-3) **I 295**

### Throughflow

Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (78-WA/FE-41) **F 87**

### Thrust Bearings

Centrifugal Effects in Hydrostatic Porous Thrust Bearing (TB) **L 381**

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) **L 154; (D) L 161; (AC) L 162**

A Study of the Stability of an Externally Pressurized Gas-Lubricated Thrust Bearing With a Flexible Damped Support (D) (AC) **L 242**

### Thrust Carrying Roller Bearing

A Functional Evaluation of a Thrust Carrying Cylindrical Roller Bearing Design (78-Lub-28) **L 164; (D) (AC) L 170**

Thullen, P. Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**

Tichy, J. A. An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145; (D) L 152; (AC) L 153**

Tien, C. L. Surface Radiative Exchange in Rod Bundles (TN) **HT 378**

Tilliette, Z. P. An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) **P 130**

### Tilt Nacelle Subsonic V/STOL Aircraft

Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) **P 290**

### Tilting-Pad Thrust Bearings

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) **L 154; (D) L 161; (AC) L 162**

### Time-Domain Analysis

Technique for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) **I 416**

Time-Domain Structural Response Simulation in a Short-Crested Sea **EHT 270**

### Time Optimum Control

Time Optimum Control of a Two Capacity Thermal Environmental System With Louvers **D5 150**

### Time Progression

Time Progression of Hemolysis of Erythrocyte Populations Exposed to Supraphysiological Temperatures **BE 213**

### Time-Temperature Parameters

A Quarter-Century of Progress in the Development of Correlation and Extrapolation Methods for Creep Rupture Data **MT 317**

### Time-Varying Loading

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction **PVT 118**

### Time-Varying Moments

Inelastic Bending of Beams Under Time-Varying Moments—A State Variable Approach (79-PVP-82) **PVT 305**

### Timewise Periodic Boundary Conditions

Stability of a Horizontal Porous Layer with Timewise Periodic Boundary Conditions **HT 244**

### Timoshenko Beams

Eigenvalues for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**

### Tin Atoms

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) **L 201; (D) L 206; (AC) L 207**

Ting, K. L. Higher Order, Planar Tangent-Line Envelope Curvature Theory (78-DET-21) **MD 563**

Tipet, N. Lubrication With Micropolar Liquids and Its Application to Short Bearings **L 356**

Tirosh, J. Theoretical and Experimental Study of the Conform Metal Forming Process (78-WA/PROD-1) **I 116**

Tishkoff, J. M. Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 61**

### Tissue Elasticity

Constitutive Equation of Lung Tissue Elasticity **BE 38**

### Tissue Healing Systems

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

### Titanium

Lubricated Extrusion of "T" Sections from Aluminum, Titanium and Steel Using Computer-Aided Techniques (78-WA/PROD-12) **I 319**

Materials for Human Implantation **BE 2**

### Titanium Alloys

50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 86**

Todreas, N. Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods **F 429; (D) F 434; (AC) F 435**

Todreas, N. E. Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**

### Tokamak Fusion Reactors

Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

### Tolerance Calculations

Computer-Aided Tolerancing (BR) **Ap 172**

Tomizuka, M. About This Special Issue **DS 89**; Application of Optimal Preview Control to Power Plant Cooling Systems (78-WA/DSC-23) **DS 162**; On the Optimal Digital State Vector Feedback Controller With Integral and Preview Actions **DS 172**; An Optimal Standard for Solar Heating Systems (78-WA/DSC-19) **DS 138**; A Simple Digital Control Scheme for a Class of Multi-Input, Multi-Output Industrial Processes (79-WA/DSC-10) **DS 339**

Tóndér, K. Application of Average Flow Model to Lubrication Between Rough Sliding Surfaces (D) **L 229; (AC) L 230**

Tonks, N. A Note on the Phase Relationships Involved in the Whirling Instability in Tube Arrays (D) **F 530**

### Tonometry

Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry **BE 267**

### Tool Guidance

Optimal Design of Multi-Edge Cutting Tools for BTA Deep-Hole Machining (78-DET-66) **MD 281**

### Tool Life

Reliability Analysis of Cutting Tools (78-WA/PROD-9) **I 185**

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**

### Tool Life Scatter

Multi-Tool Machining Analysis—Part I Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**; Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

### Tool Wear Profile

On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**

### Tools

An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**

### Tooth Profile Errors

Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**

### Tooth Surface

A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio **MD 274**

### Topography Analysis

Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 165**

### Topological Technique

Catastrophe Theory: Selected Papers 1972-77 (BR) **AM 237**

Topological Reaction Force Analysis (78-DET-58) **MD 192**

Topper, T. H. Fatigue Crack Propagation of Short Cracks (78-Mat-7) **MT 42**

Toren, M. Laminar Boundary Layer on a Finite Disk in a Rotating Compressible Isothermal Flow **F 168**; Laminar Compressible Flow Over a Stationary Disk in a Rotating Cylinder **F 173**

Torikoshi, K. Characteristics of Fluidization of a Solid Particle Bed **HT 386**

### Torispherical Shells

Elastic-Plastic Buckling of Internally Pressurized Thin Torispherical Shells (79-PVP-52) **P 216**

Plastic Collapse of Thin Internally Pressurized Torispherical Shells **PVT 311**

### Toroidal Magnetic Field

Buckling of a Superconducting Ring in a Toroidal Magnetic Field **AM 151**

### Toroidal Shell Shapes

A Derivation of Bending Free Toroidal Shell Shapes for Tokamak Fusion Reactors **AM 120**

### Toroidal Thermosyphons

Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**

The Transient and Stability Behavior of a Natural Convection Loop **HT 684**

### Torque

Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**

An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) **AM 186**

Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) **MD 258**

Partial Dynamic State Synthesis by Use of Mass Parameters in a System Coupler Link (78-DET-61) **MD 246**

Torque Characteristics for Spherical Annulus Flow **F 284**

### Torque Characteristics

Technology Transfer in the Determination of Torque Characteristics of Instrument Ball Bearings at High Speeds with Radial and Axial Loads (78-DET-69) **MD 126**

### Torque Coefficient Correlation

An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **I 147**

### Torque Systems

Generalized Force Curve Shapes for Structural Synthesis of Joint Torque Systems to Produce a Desired Dynamic Motion Time Response of a 4R-4Bar (78-DET-39) **MD 238**

Torrance, K. E. Open-Loop Thermosyphons with Geological Applications (79-HT-64) **HT 677**

### Torsion

Mechanical Properties of Human Lumbar Spine Motion Segments—Part I: Responses in Flexion, Extension, Lateral Bending, and Torsion **BE 48**; Part II: Responses in Compression and Shear; Influence of Gross Morphology **BE 53**

A New Key and Keyway Design (78-WA/DE-7) **MD 338**

Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) **PVT 207**

### Torsion Tests

A Three-Dimensional Finite Element Analysis of the Double-Torsion Test **PVT 328**

### Torsional Load Displacement

Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) **BE 134**

### Torsional and Telescopic Shear

Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**

The Horizontal Plate Filter as a Torsional Vibration System With Vibration Absorption (77-DET-86) **MD 163**

### Torsional Vibration

On the Torsional Vibration of Branched Systems Using Extended Transfer Matrix Method (77-WA/DE-4) **MD 546**

### Torsional Waves

Diffraction of Torsional Waves by a Flat Annular Crack in an Infinite Elastic Medium **AM 827**

### Torus

Flow in a Toroidal Thermosyphon with Angular Displacement of Heated and Cooled Sections (78-HT-44) **HT 672**

Torvik, P. J. On the Determination of Stresses, Displacements, and Stress-Intensity Factors in Edge-Cracked Sheets With Mixed Boundary Conditions **AM 611**

### Total Strain

Viscoplasticity Based on Total Strain. The Modelling of

Creep With Special Considerations of Initial Strain and Aging **MT 380**

**Toughness Properties**  
The Influence of Inclusions on the Toughness and Fatigue Properties of A516-70 Steel **MT 265**

**Townes, H. W.** An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (76-WA/Enr-1) **P 213**

**Townley, C. H. A.** The Development of High Temperature Design Methods Based on Reference Stresses and Bounding Theorems **MT 349**

**Townsend, J. H.** (author) Project Manager's Guide (GR) **MD 386**

**Townsend, M. A.** Application of Optimization Techniques to the Production of Plastic Pellets (78-WA/DE-3) **MD 650**; Numerical Investigation of Some Potential Problems of Univariate Minimization Methods **MD 663**; Optimal Control Concepts for the Characterization and Design of Highway Vehicle - Trailer Systems (78-WA/DSC-27) **DS 127**; Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**

**Toyoda, J.** Interface Pressure Distribution in a Bolt-Flange Assembly (77-WA/DE-11) **MD 330**

**Trace Element Emissions**  
Trace Element Emissions from Coal-Fired Power Plants (78-WA/Fu-9) **P 620**

**Tracked Ram Air Cushion Vehicles**  
Two-Dimensional Dynamics of Tracked Ram Air Cushion Vehicles With Fixed and Variable Winglets (79-WA/DSC-11) **DS 321**

**Traction Drives**  
The Influence of Fluid Rheology on the Performance of Traction Drives (78-Lub-10) **L 286**; (D) **L 273**; (AC) **L 274**

**Traction-Free Crack Tip**  
A Closed Crack Tip Terminating at an Interface (78-WA/APM-28) **AM 97**

**Trailer Systems**  
Optimal Control Concepts for the Characterization and Design of Highway Vehicle - Trailer Systems (78-WA/DSC-27) **DS 127**

**Tran, H. T.** Reflection, Refraction, and Absorption of Elastic Waves at a Frictional Interface: SH Motion (79-WA/APM-5) **AM 625**

**Trans-Alaska Pipeline**  
Geotechnical Issues and Answers During Construction of the Trans-Alaska Pipeline (78-Pet-66) **ERT 128**  
Measurement of the Auroral-Induced Current in the Trans-Alaska Pipeline **ERT 156**

**Transcendental Equations**  
Eigenfrequencies of Continuous Plates With Arbitrary Number of Equal Spans **AM 656**

**Transducers**  
Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) **BE 124**  
Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) **P 373**  
Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) **P 471**

**Transfer Matrix**  
On the Torsional Vibration of Branched Systems Using Extended Transfer Matrix Method (77-WA/DE-4) **MD 546**

**Transfer Measurement**  
Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**

**Transient Combustion**  
Numerical Solution of Solid Propellant Transient Combustion (77-HT-17) **HT 359**

**Transient Elastodynamics**  
Transient Elasto-Dynamic Response of a Circular Crack in a Thick Plate Under Torsion (79-PVP-6) **PVT 297**

**Transient Flow**  
The Transient and Stability Behavior of a Natural Convection Loop **HT 684**

**Transient Heat-Transfer Measurement**  
Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**

**Transient Interaction**  
Transient Interaction of a Circular Plate and a Fluid Medium **AM 26**

**Transient Loads**  
A State Space Method for Optimal Design of Vibration Isolators **MD 309**

**Transient Mobility**  
Limit Positions of Spatial Linkages via Connectivity Sum Reduction (78-DET-12) **MD 504**; (D) (AC) **MD 507**

**Transient Natural Convection**  
Three-Dimensional Numerical Analysis of Transient Natural Convection in Rectangular Enclosures **HT 114**

**Transient Response**  
A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 139**

**Transition Boiling**  
Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**  
Surface Wetted Area during Transition Boiling in Forced Convective Flow (TN) **HT 381**

**Transitory Stall**  
An Experimental Investigation of Flow Unsteadiness Generated by Transitory Stall (D) (AC) **F 405**

**Transmissibility Data**  
Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings **L 129**

**Transmission Angles**  
Performance Criteria for High-Speed Crank-and-Rocker Linkages Part I: Plane Crank-and-Rocker Linkages (78-DET-33) **MD 20**; Part II: Spherical Crank-and-Rocker Linkages (78-DET-34) **MD 26**

**Transmission Constraints**  
Optimization of Crank-and-Rocker Linkages with Size and Transmission Constraints (78-DET-6) **MD 51**

**Transmission Development**  
3000-HP Roller Gear Transmission Development Program. Volume VI. Reliability and Maintainability Report (GR) **MD 174**

**Transmission Errors**  
Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**

**Transmission Failure Analysis**  
Mode of Failure Investigations of Helicopter Transmissions (GR) **MD 178**

**Transmission Tower Anchor Bolts**  
Residual Fatigue Life Determination of Anchor Bolts (78-Mat-8) **MT 47**

**Transonic Flow**  
Numerical Solutions of Nonsteady Two-Dimensional Transonic Flows **F 341**

**Transonic Rotors**  
A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) **P 415**

**Transport Equation**  
A New Formulation for Computational Fluid Dynamics **F 453**

**Transport Package**  
Design of an Extreme Crash Resistant Transport Package (78-DE-W-4) **MD 342**

**Transport Phenomena**  
Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction **HT 217**

**Transportation**  
Optimal Control Concepts for the Characterization and Design of Highway Vehicle - Trailer Systems (78-WA/DSC-27) **DS 127**

**Transverse Load**  
The Nonlinear Behavior of Elastic Slender Straight Beams Undergoing Small Strains and Moderate Rotations (79-APM-15) **AM 161**

**Transverse Motion**  
Clamped Beam Parametric Amplifier (79-APM-9) **AM 197**

**Transverse Shear**  
The Effect of Transverse Shear in a Cracked Plate Under Skew-Symmetric Loading (79-WA/APM-16) **AM 618**

**Transverse Stream**  
Experimental Study of a Solid-Gas Jet Issuing into a Transverse Stream (D) (AC) **F 147**

**Transverse Vibration**  
Eigensolutions for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 169**  
A Feedback Vibration Controller for Circular Saws **DS 44**

**Transversely Injected Stream**  
The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part II: Influence of Aspect Ratio (78-GT-24) **P 61**

**Transversely Isotropic Solids**  
Consolidation in Transversely Isotropic Solids **AM 65**

**Trantina, G.** Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

**Trash Removal**  
Dust-Trash Removal by the SRRC Tuft-To-Yarn Processing System (78-Tex-2) **I 191**

**Triangular Arrays**  
Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods **F 429**; (D) **F 434**; (AC) **F 435**  
Predicted Secondary Flows in Triangular Array Rod Bundles (79-WA/FE-2) **F 354**; (D) (AC) **F 362**

**Triangular Enclosures**  
The Measurement of Natural Convective Heat Transfer in Triangular Enclosures (78-WA/HT-9) **HT 648**

**Triangular Penetration Patterns**  
Elasto-Plastic Analysis of Perforated Plates Containing Triangular Penetration Patterns of 10 Percent Ligament Efficiency (79-PVP-32) **PVT 210**

**Triangular Plates**  
Alternate Exact Equations for the Inextensional Deformation of Arbitrary, Quadrilateral, and Triangular Plates (78-WA/APM-25) **AM 895**

**Tribollet, B.** Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall **F 121**

**Tribology**  
Elastohydrodynamics and Related Topics (Fifth Leeds - Lyon Symposium on Tribology) (FR) **L 398**  
Men of Tribology **L 1**; **L 115**; **L 393**  
A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 407**

**Trochans**  
The Effect of Pressure on Skin Temperature Measurements for a Disk Sensor **BE 261**

**Trochoid Properties**  
Degree of the Input-Output Equations of Certain Geared Five-Bar Mechanisms (78-DET-27) **MD 471**

**Truman, C. R.** Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (78-WA/FE-41) **F 87**

**Trupp, A. C.** Laminar Free Convection in Small Aspect Ratio Rectangular Enclosures with Isothermal Boundary Conditions (TN) **HT 569**; Predicted Secondary Flows in Triangular Array Rod Bundles (79-WA/FE-2) **F 354**; (D) (AC) **F 362**

**Trustee, B.** (author) 3000-HP Roller Gear Transmission Development Program. Volume VI. Reliability and Maintainability Report (GR) **MD 174**

**Tsahalis, D. T.** The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) **AM 499**

**Tsai, W. D.** A Mathematical Model for Drill Point Design and Grinding (78-WA/PROD-35) **I 333**

**Tseng, A. A.** A Three-Dimensional Finite Element Analysis of the Double-Torsion Test **PVT 328**

**Tseng, M. M.** On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 100**

**Tsao, R. C. H.** Solution of Anisotropic Problems of First Class by Coordinate-Transformation **HT 348**

**Tsubuku, T.** Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 268**

**Tsuruno, S.** Mechanism of Heat and Momentum Transfer of Combined Free and Forced Convection with Opposing Flow (TN) **HT 573**

**Tube Arrays**  
A Note on the Phase Relationships Involved in the Whirling Instability in Tube Arrays (D) **F 530**

**Tube Bank**  
Solids Circulation in Turbulent Fluidized Beds and Heat Transfer to Immersed Tube Banks **HT 391**

**Tube Bundles**  
Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles **HT 622**

**Tube Expanders**  
The Residual Strain Distribution Around a Fastener Hole Coldworked With a Tube Expander (TB) **MT 304**

**Tube Fittings**  
Experimental Studies of Tube Fittings in Steam Generators and Heat Exchangers **PVT 125**

**Tubes**  
Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**  
An Analysis of the Rupture Behavior of Pressurized Fast

Reactor Cladding Tubes Subjected to Thermal Transients **MT 293**

Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes **HT 270**

Combined Torsional and Telescopic Shear of Compressible Hyperelastic Tube (BN) **AM 223**

Convective Heat Transfer of Laminar Droplet Flow in Thermal Entrance Region of Circular Tubes **HT 480**

Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow **PVT 106**

Effect of Surface Roughness on Heat Transfer from Horizontal Immersed Tubes in a Fluidized Bed **HT 397**

Effects of Shearing Loads and In-Plane Boundary Conditions on the Stability of Thin Tubes Conveying Fluid **AM 779**

Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 306**

Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow **F 200; (D) F 206; (AC) F 207**

Fretting Wear of Heat Exchanger Tubes—Part I: Experiments (78-JPGC-NE-8) **P 625; Part II: Models (78-JPGC-NE-9) P 620**

A Generalized Procedure for the Design and Optimization of Fluted Gregori Condensing Surfaces **HT 335**

Heat Transfer Correlation for Subcooled Water Films on Horizontal Tubes (TN) **HT 176**

Heat Transfer Downstream of a Fluid Withdrawal Branch in a Tube **HT 23**

On Laminar Dispersion for Flow Through Round Tubes (79-WA/APM-14) **AM 750**

Large Strain Solution for Pressurized Elastoplastic Tubes (BN) **AM 228**

Local and Average Heat Transfer Characteristics for Turbulent Airflow in an Asymmetrically Heated Tube **HT 635**

Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (D) **AM 963; (AC) AM 964**

A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (TN) **HT 178; (Er) HT 375**

Optimal Fin-Side Design of Compact Tube-in-Fin Heat Exchangers with Rippled Fins **HT 514**

Radiant Exchange for a Fin and Tube Solar Collector (TN) **HT 185**

Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) **HT 376**

Surface Radiative Exchange in Rod Bundles (TN) **HT 378**

On Thermal Expansion Induced Stresses in U-Bends of Shell-and-Tube Heat Exchangers (78-JPGC-NE-14) **P 634**

Transient Freezing of Liquids in Turbulent Flow inside Tubes **HT 485**

Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 61**

**Tubesheets**

Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA-NE-6) **P 9; Part II: Applications (77-WA-NE-7) P 16**

Velocity Distributions and Turbulence Intensities at Tubesheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**

**Tubular Ammonia Reactor**

Robust Multivariable Controllers for a Tubular Ammonia Reactor **DS 290**

**Tubular Construction**

Effects of Soil-Structure Interaction on Seismic Response of a Steel Gravity Platform **ERT 171**

**Tubular Specimens**

Plastic Flow of Mild Steel Under Proportional and Non-Proportional Straining at a Controlled Rate **MT 248**

**Tuft-to-Yarn Processing System**

Dust-Trap Removal by the SRRC Tuft-to-Yarn Processing System (78-Tex-2) **I 197**

**Tulin, M. P.** Effects of Additive Ejection on Lifting Hydrodynamics (77-FE-27) **F 244**

**Tumor Heating**

Thermal Analysis and Design Considerations for a Dual-Beam Microwave Applicator for Hyperthermia Research (78-WA/Bio-7) **BE 151**

**Tungsten**

Materials for Human Implantation **BE 2**

**Tungsten Lamp**

Back-Melting of a Horizontal Cloudy Ice Layer with Radiative Heating **HT 90**

**Turbid Water Bodies**

Prediction of Radiation Absorption and Scattering in Turbid Water Bodies (77-HT-47) **HT 63**

**Turbine Cascades**

The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) **P 61**

**Turbine Disk Cooling**

Jet Cooling at the Rim of a Rotating Disk (78-GT-25) **P 68**

**Turbine Engine**

Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 250**

Optimal Control of Turbine Engines **DS 117**

**Turbine Exit Guide Vanes**

Application of Nonseries Airfoil Design Technology to Highly Loaded Turbine Exit Guide Vanes (78-GT-108) **P 202**

**Turbine Fuels**

Alternative Aircraft Fuels (78-GT-59) **P 155**

**Turbine Power Cycles**

Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) **P 217**

**Turbine Stator**

Measurement of Heat-Transfer Rate to a Gas Turbine Stator (78-GT-119) **P 275**

**Turbine Wheels**

Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**

**Turbines**

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) **P 405**

Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) **P 358**

Compensation of the Speed Governor of a Water Turbine by the Method of Inequalities **DS 205**

Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440; (D) P 448; (AC) P 449**

Condensate Reheating and Separate Reheating Hotwells for Central Station Main Condensers (78-JPGC-Pwr-14) **P 483**

Demonstration of Ceramic Design Methodology for a Ceramic Combustor Liner (78-GT-137) **P 320**

Design and Development of a Low Emission Combustor for a Car Gas Turbine (78-GT-155) **P 422**

Development of a Compact Gas Turbine Combustor to Give Extended Life and Acceptable Exhaust Emissions (78-GT-146) **P 349**

Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 549**

The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) **P 477**

Pressure Instrumentation for Gas Turbine Engines—A Review of Measurement Technology (78-GT-148) **P 373**

Thermophoresis—Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) **P 542; (D) P 548; (AC) P 547**

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 397; (D) P 404**

**Turbochargers**

Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440; (D) P 448; (AC) P 449**

**Turbotan Engine**

Design of Multivariable Controllers for an Advanced Turbotan Engine by Zakian's Method of Inequalities **DS 299**

**Turbojet Engines**

A Rotating Stall Control System for Turbojet Engines (78-GT-115) **P 305; (D) P 313; (AC) P 314**

**Turbomachinery**

Laminar Throughflow of a Fluid Containing Particles Between Corotating Disks (76-WA/FE-41) **F 87**

The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) **P 182**

**Turbomachinery Blades**

Vibration Frequencies of a Twisted Uniform Blade with One End Spring Hinged and the Other Free (TB) **P 679**

**Turbomachinery Flows**

An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) **P 141**

**Turbomachines**

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with

Log-Spiral Blade Surfaces (78-GT-195) **P 450**

An Investigation of Regenerative Blowers and Pumps (78-WA/PID-2) **I 147**

Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**

**Turbulence**

Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) **P 288**

Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) **P 281**

Flow and Pressure Characteristics Downstream of a Segmental Blockage in a Turbulent Pipe Flow **F 200; (D) F 206; (AC) F 207**

Handbook of Turbulence, Volume 1 (BR) **AM 237**

The Interaction of Solid or Liquid Particles and Turbulent Fluid Flow Fields—A Numerical Simulation **F 285**

Linearized  $\bar{u}-v$  Analysis of Free Turbulent Mixing in Streamwise Pressure Gradients With Experimental Verification **AM 493**

Numerical Analysis of Turbulent Flow Along an Abruptly Rotated Cylinder (78-WA/FE-10) **F 251**

Subsonic Turbulent Flow Past a Downstream Facing Annular Step (78-WA/FE-15) **F 230; (D) F 235; (AC) F 236**

Turbulent Co-Current Gas-Liquid Flow in a Tube With and Without Swirl **F 61**

Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**

**Turbulence Components**

The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) **HT 193**

**Turbulence Generation**

An Experimental Study of Flow Over a Rectangular Body (79-WA/FE-11) **F 443**

**Turbulence Intensities**

Velocity Distributions and Turbulence Intensities at Tubesheets in a Two-Pass Condenser Model (78-JPGC-NE-6) **P 490**

**Turbulence Model**

A Reynolds Stress Model for Flows With Drag Reduction **F 158**

**Turbulence Modeling**

Turbulence Modeling of Axial Flow in a Bare Rod Bundle (79-HT-38) **HT 628**

**Turbulence Research**

The Calibration of Cylindrical Hot-Film Velocity Sensors **AM 15**

**Turbulent Airflow**

Local and Average Heat Transfer Characteristics for Turbulent Airflow in an Asymmetrically Heated Tube **HT 635**

**Turbulent Boundary Layers**

Calculation of a Turbulent Boundary Layer Downstream of a Step Change in Surface Temperature **HT 144**

An Integral Method for Calculating Turbulent Boundary Layer With Separation **F 110**

Predicted Effects of Tangential Slot Injection on Turbulent Boundary Layer Flow over a Wide Speed Range (77-WA/HT-29) **HT 699**

Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) **P 23; (D) P 29; (AC) P 30**

Three-Dimensional Structure of a Nominally Planar Turbulent Boundary Layer **F 326**

Turbulent Boundary Layer Heat Transfer on Curved Surfaces **HT 521**

**Turbulent Buoyant Jets**

On Prediction and Unified Correlation for Decay of Vertical Buoyant Jets (78-HT-21) **HT 532**

**Turbulent Flow**

Analysis of Turbulent Flow and Heat Transfer in Internally Finned Tubes and Annuli **HT 29**

Calculation of Variable Property Turbulent Friction and Heat Transfer in Rough Pipes **HT 468**

Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries **HT 588**

On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction **P 459; Part B—Film Cooling Performance P 466**

Numerical Methods in Laminar and Turbulent Flows (BR) **AM 967**

Numerical Simulation of Particulate Motion Turbulent Gas-Solid Channel Flow (76-WA/FE-37) **F 319**

Prediction of Incompressible Turbulent Separating Flow (D) **F 147; (AC) F 148**



Subsonic Turbulent Flow Past a Planar Fence F 373  
 A Thermohydrodynamic Analysis of Journal Bearings L 21  
 Transient Freezing of Liquids in Turbulent Flow Inside Tubes HT 485  
 Turbulent Flow Over a Disk Normal to a Wall (79-WA/FE-7) F 461  
 Turbulent Flow Over a Plane Symmetric Sudden Expansion F 348; (D) (AC) F 532  
**Turbulent Flowing Mixtures**  
 Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) P 343  
**Turbulent Fluidized Beds**  
 Solids Circulation in Turbulent Fluidized Beds and Heat Transfer to Immersed Tube Banks HT 391  
**Turbulent Friction**  
 Calculation of Variable Property Turbulent Friction and Heat Transfer in Rough Pipes HT 469  
**Turbulent Jets**  
 Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) HT 353  
**Turbulent Pipe Flow**  
 The Effect of Gaseous Cavitation on Fluid Transients F 79  
**Turbulent Thermal Plume**  
 Structure of a Turbulent Thermal Plume Rising Along an Isothermal Wall (78-HT-24) HT 248  
**Turbulent Velocity**  
 Structure of Turbulent Velocity and Temperature Fluctuations in Fully Developed Pipe Flow HT 15  
**Turbulent Wall Pressure Fluctuations**  
 Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations BE 89  
**Tufen, J. M.** Lateral Stability of Freight Cars With Axes Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) 11  
**Twist Drill Grinder**  
 A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) I 205  
**Twisted-Pore Effects**  
 Twisted-Pore Effect on Fluid Flow, Solid Deformation and Stress in a Poro-Elastic Cylinder AM 784  
**Two-Degree-of-Freedom System**  
 A Two-Degree-of-Freedom System With Coulomb Bearing Friction (BN) AM 217  
**Two-Dimensional Analysis**  
 Exact Two-Dimensional Analysis of Circular Disk Spiral Groove Bearing (Part I) L 424; (Part II) L 431  
**Two-Dimensional Cascade**  
 A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) P 431  
**Two-Dimensional Dynamics**  
 Two-Dimensional Dynamics of Tracked Ram Air Cushion Vehicles With Fixed and Variable Winglets (79-WA/DSC-1) DS 321  
**Two-Dimensional Laminar Boundary Layers**  
 Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) P 23; (D) P 29; (AC) P 30  
**Two-Dimensional Lateral Flow**  
 Two Dimensional Lateral Flow Past a Barrier (79-WA/FE-14) F 449  
**Two-Dimensional Model**  
 Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) AM 31  
**Two-Dimensional Rectangular Cylinders**  
 A Comparison of Correction Methods Used in the Evaluation of Drag Coefficient Measurements for Two-Dimensional Rectangular Cylinders (79-WA/FE-3) F 506  
**Two-Dimensional Surfaces**  
 An Analysis of the Flow of a Viscous Elastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) L 145; (D) L 152; (AC) L 153  
**Two-Layered Copper Powder Medium**  
 Computed Dynamic Compaction of a Two-Layered Copper Powder Medium MT 122  
**Two-Phase Dispersed Flow**  
 On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow HT 288  
**Two-Phase Flow**  
 Two-Phase Flow on the Shell-Side of a Segmentally Baffled Shell-and-Tube Heat Exchanger (77-WA/HT-22) HT 38  
**Two-Phase Propane**  
 Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube HT 309

## Two-Player Games

Parameter Optimization for Two-Player Zero-Sum Differential Games DS 345

## U

### U-Tube Heat Exchangers

Study of Bolted Joint Integrity and Inter-Tube-Pass Leakage in U-Tube Heat Exchangers—Part I: Analysis (77-WA/NE-6) P 9; Part II: Applications (77-WA/NE-7) P 18

### U-Tubes

On Thermal Expansion Induced Stresses in U-Bends of Shell-and-Tube Heat Exchangers (78-JPGC-NE-14) P 634

Überall, H. Resonance Method for Identifying Fluids Filling Cavities in Elastic Solids (BN) AM 958

Ulcker, J. J., Jr. Design Charts for Disk Cam with Reciprocating Radial Roller Followers (78-DET-36) MD 485

Ullman, D. An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) AM 126

### Ultra-Thin Films

Experimental Investigation of Slider Gas Bearings With Ultra-Thin Films L 510

### Ultrasonic Monitoring

Ultrasonic Monitoring of Growth of Part-Through Thickness Defects at 290°C (78-NE-12) P 471

### Ultrasonic Temperature Profiling

Ultrasonic Temperature Profiling System for Detecting Critical Heat Flux in Non-Uniformly Heated Tube Bundles HT 622

### Ultrasonics

Ultrasonic Assessment of Simulated Atherosclerosis: In-Vitro and In-Vivo Comparisons BE 73

### Unbalance Response

Stability and Unbalance Response of Centrally Preloaded Rotors Mounted in Journal and Squeeze Film Bearings L 120

### Uncertainties

Guaranteed Asymptotic Stability for Some Linear Systems With Bounded Uncertainties DS 212

### Underground Explosions

Computational Modeling of Explosive Fracture and Permeability Enhancement ERT 28

### Underground Facility

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) ERT 82; Part II: Rock Mechanics Evaluation (78-Pet-64) ERT 97

### Underground Lifeline Systems

Some Aspects of Seismic Risk Analysis of Underground Lifeline Systems (78-WA/PVP-6) PVT 31

### Underground Nuclear Explosion

Stability of Flow From a Nuclear Cavity (79-FE-5) F 335

### Underground Railway Systems

Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) F 128

### Undersea Applications

Hyperhemispherical Viewports for Undersea Applications (78-WA/OCE-2) I 369; (D) I 376; (AC) I 377

### Underwater Technology

Impact Motion of a Buoyant Cylinder Released Underwater on a Surface Body (78-Pet-11) ERT 167

Underwood, F. H. Numerical Study of the Steady Axisymmetric Flow Through a Disk-Type Prosthetic Heart Valve in an Aortic-Shaped Chamber BE 198

### Uniaxial Damage Accumulation Law

A Uniaxial Damage Accumulation Law for Time-Varying Loading Including Creep-Fatigue Interaction PVT 116

### Uniaxial Loads

Optimum Hole Shapes in Finite Plates Under Uniaxial Load (DDM) AM 691

### Uniaxial Strain

On H. Hencky's Approximate Strain-Energy Function for Moderate Deformations AM 78

### Uniaxial Tensile Strength

Diametral Compressive Testing Method MT 139

### Uniaxial Tension

Waves From Suddenly Punched Hole in Plate Subjected to Uniaxial Tension Field (79-WA/APM-32) AM 673

### Uniform Beams

Clamped Beam Parametric Amplifier (79-APM-9) AM 197

Dynamics of Slender Tapered Beams With Internal or

External Axial Flow—Part 1: Theory (79-APM-3) AM 45

## Univariate Minimization Methods

Numerical Investigation of Some Potential Problems of Univariate Minimization Methods MD 663

## Unsteady Boundary Layers

REVIEW—Unsteady Boundary Layers, Separated and Attached F 29

## Unsteady Flow

Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) P 42

## Unsteady Mixed Convection

Unsteady Mixed Convection Heat Transfer from a Horizontal Circular Cylinder HT 126

## Unsteady Pressure Gradient

Fluctuating Flow of a Viscous Elastic Fluid in a Porous Channel AM 21

## Unsteady Transonic Flow

Numerical Solutions of Nonsteady Two-Dimensional Transonic Flows F 341

## Unsteady Viscous Flow

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) BE 114

## Unsymmetric Articulation

Steering and Stability of Unsymmetric Articulated Railway Vehicles DS 256

Uptake, D. P. Approximate Analysis of Intersecting Equal Diameter Cylindrical Shells Under Internal Pressure (79-PVP-2) PVT 194

## Upper Bounds

Fundamental Frequency of Beams With Elastic Rotational Restraints (TB) MD 711

## Utility Boilers

The Use of Gravity Fractionation Techniques for Assessing Slagging and Fouling Potential of Coal Ash (78-WA/CD-3) P 500

## Utility Gas Turbines

Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) P 556; (D) P 562

Uzzell, J. C., Jr. Exact Solution for Freezing in Cylindrical Symmetry with Extended Freezing Temperature Range HT 331

## V

Valentino, J. V. Stability of Shock Waves of Arbitrary Strength With Viscosity and Heat Conduction (79-APM-27) AM 595

## Validation Procedure

An Analysis Procedure for the Validation of On-Site Performance Measurements of Gas Turbines (78-GT-152) P 405

## Value Comparison

Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions HT 306

## Valves

Maximum Isentropic Flow of Dry Saturated Steam Through Pressure Relief Valves PVT 113

van Hoften, J. D. A. Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) BE 141; (D) BE 149; (AC) BE 150

van Riel, H. M. A Finite-Element Model for Plane-Strain Plasticity (79-WA/APM-19) AM 536

Van Sambeek, L. L. National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) ERT 82; Part II: Rock Mechanics Evaluation (78-Pet-64) ERT 97

Van Scher, S. W. Heat Transfer from Aluminum to He II—Application to Superconductive Magnetic Energy Storage HT 371

Van Sickle, D. C. Determining the In-Vivo Areas of Contact in the Canine Shoulder BE 271

Van Strijp, A. J. R. Higher Pump Pressures Can Reduce Drilling Costs ERT 59

Vanderbrook, M. A. Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles HT 295

## Vanless Radial Diffusers

Experimental Investigation of Unsteady Phenomena in Vanless Radial Diffusers (78-CT-23) P 52; (D) P 59; (AC) P 60

Vanoli, R. Further Contributions to the Study of the



- Leidenfrost Phenomenon** HT 812
- Vapor**  
A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) HT 736
- Vapor Explosions**  
Nucleation Processes in Large Scale Vapor Explosions HT 280
- Vapor Flow Rate**  
Distillation Columns—A Class of Dynamic Systems With Multiplicative Inputs DS 58
- Vapor-Liquid Flow**  
An Isentropic Streamtube Model for Flashing Two-Phase Vapor-Liquid Flow (Er) HT 375
- Vapor Nucleation**  
Homogeneous Vapor Nucleation and Superheat Limits of Liquid Mixtures HT 617
- Vaporization**  
Further Contributions to the Study of the Leidenfrost Phenomenon HT 612
- Vardy, A. E.** Cross-Ventilation of Underground Railway Tunnels (78-WA/FE-14) F 128
- Varejao, L. M. C.** Melting about a Horizontal Row of Heating Cylinders (TN) HT 732
- Variable Circular Arcs**  
Technology Transfer in the Design of Adjustable Linkages (78-DET-67) MD 495
- Variable Coefficients**  
Approximate Eigenvalues for Systems With Variable Parameters (78-WA/APM-29) AM 203
- Variable Index Ratios**  
General Forms of Index Ratios and Generation of Variable Index Ratios by Series-Connected Geneva Mechanisms with Single or Multiple Driving Pins (78-DET-28) MD 438
- Variable Inertia Flywheel (VIF)**  
An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) AM 186
- Variational Analysis**  
A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection HT 592
- Varus-Valgus Load-Displacement**  
Effect of Fixed Axes of Rotation on the Varus-Valgus and Torsional Load-Displacement Characteristics of the In-Vitro Human Knee (78-WA/Bio-4) BE 134
- Vaughan, D. A.** Corrosion and Deposits from Combustion of Solid Waste—Part VI: Processed Refuse as a Supplementary Fuel in a Stoker-Fired Boiler (78-WA/Fu-4) P 592; Erosion-Corrosion Effects on Boiler Tube Metals in a Multisolid Fluidized-Bed Combustor (77-WA/CD-1) P 1; (D) P 7; (AC) P 8
- Vawter, D. L.** Constitutive Equation of Lung Tissue Elasticity BE 38
- Vayo, V. W.** Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) BE 114
- Vedhanayagam, M.** Method for Visualizing High Prandtl Number Heat Convection (TN) HT 571
- Vehicle Engineering**  
Harmonic Analysis of Dynamic Systems With Nonsymmetric Nonlinearities (78-WA/DSC-10) DS 31
- Vehicle-Follower Control**  
Vehicle-Follower Control for Dynamic Entrainment of Automated Guideway Transit Vehicles DS 314
- Vehicle Suspensions**  
Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Lift and Guidance DS 217
- A Dynamics Simulation for a High Speed Magnetically Levitated Guided Ground Vehicle DS 223
- Vehicles**  
Optimal Control Concepts for the Characterization and Design of Highway Vehicle - Trailer Systems (78-WA/DSC-27) DS 127
- Vehicular Gas Turbine**  
Influence on Exhaust Emissions from Automotive Gas Turbines (78-GT-85) P 186
- Veletos, A. S.** Effects of Soil-Structure Interaction on Seismic Responses of a Steel Gravity Platform ERT 171
- Velkoff, H.** An Introduction to the Variable Inertia Flywheel (VIF) (79-APM-5) AM 186
- Velkoff, H. R.** Low-Velocity Heat Transfer to a Flat Plate in the Presence of a Corona Discharge in Air (78-WA/HT-47) HT 157
- Velocity Characteristics**  
Velocity Characteristics of a Confined Coaxial Jet (79-WA/FE-9) F 521
- Velocity Components**  
Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) P 281
- Velocity Distribution**  
Heated Three-Dimensional Turbulent Jets (77-WA/HT-27) HT 353
- Velocity Distributions and Turbulence Intensities at Tube-sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) P 490
- Velocity Exponents**  
Velocity Exponent for Erosion and Noise Due to Cavitation F 69
- Velocity Field**  
Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) P 42
- A Probe for the Measurement of the Velocity Field F 143
- A Study of Multiple Hole Extrusion MT 135
- Velocity Fluctuation**  
On Velocity Fluctuation in Skew Four-Bar Mechanisms (78-DET-45) MD 58
- Velocity Fluctuation Parameter**  
Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution BE 96
- Velocity Gradients**  
An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) L 145; (D) L 152; (AC) L 153
- Velocity Measurements**  
Investigations of Pulsating Turbulent Pipe Flow (79-WA/FE-12) F 436
- Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) L 129; (D) L 137; (AC) L 138
- Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter HT 256
- Velocity Probes**  
An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts (78-WA/PTC-1) P 855
- Velocity Profile Models**  
An Axial Compressor End-Wall Boundary Layer Calculation Method (78-GT-81) P 233; (D) P 245; (AC) P 248
- Velocity Profiles**  
Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-2) AM 9
- A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) P 450
- Effect of Stabilizing Thermal Gradients on Natural Convection in Rectangular Enclosures HT 238
- Film Cooling Effectiveness for Injection from Multirow Holes (78-GT-32) P 101
- Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel AM 21
- Investigation of a Pulsatile Flowfield Downstream From a Model Stenosis (78-WA/Bio-6) BE 141; (D) BE 149; (AC) BE 150
- Natural Convection of Mercury in a Magnetic Field Parallel to the Gravity HT 227
- On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction P 459
- Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) P 23; (D) P 29; (AC) P 30
- Symmetrical Velocity Profiles for Jeffery-Hamel Flow (BN) AM 214
- Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water HT 313
- Velocity Ratio**  
Two Dimensional Lateral Flow Past a Barrier (79-WA/FE-14) F 449
- Velocity Response**  
Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) MD 108
- Velocity Sensors**  
The Calibration of Cylindrical Hot-Film Velocity Sensors AM 15
- Velocity Slip**  
An Analytical Study of Starved Porous Bearings L 38
- Velocity**  
Acoustic Emission From a Brief Crack Propagation Event AM 107
- Design Analysis of an Epicyclic Rotary Pump Mechanism (78-DET-46) MD 99
- A Design Point Correlation for Losses due to Part-Span Dampers on Transonic Rotors (78-GT-153) P 415
- On the Design of Thin Subsonic Airfoils AM 6
- Development of an Inlet for a Tilt Nacelle Subsonic V/STOL Aircraft (78-GT-121) P 290
- Dynamic Accuracy of Hybrid Profiling Mechanisms in Cam Manufacturing (77-WA/DE-3) MD 108
- Dynamic Response of a Circular Cylinder Subjected to Liquid Cross Flow PVT 106
- Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part I: Theory (79-APM-3) AM 45
- Effect of Mainstream Variables on Jets Issuing from a Row of Inclined Round Holes (78-GT-138) P 298
- The Effect of a Transversely Injected Stream on the Flow through Turbine Cascades—Part III: Influence of Aspect Ratio (78-GT-24) P 61
- A General Theory for Laminar Lubrication With Reynolds Roughness L 8
- Growth of a Perturbation in an Axial Flow Compressor (78-GT-30) P 87
- An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) I 87
- Inviscid Solution for the Problem of Free Overfall AM 1
- Laminar Boundary Layer on a Finite Disk in a Rotating Compressible Isothermal Flow F 166
- Laminar Compressible Flow Over a Stationary Disk in a Rotating Cylinder F 173
- Laminar Flow Measurements Employing a White Light Fringe Image Velocimeter (WVIV) (BN) AM 218
- Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction HT 217
- Low Frequency Bloch Waves for Wave Equations Whose Speed is a Deterministic, or Randomlike, Periodic Function (D) (AC) AM 235
- Measurements of Developing and Fully Developed Heat Transfer Coefficients along a Periodically Interrupted Surface HT 211
- On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow HT 288
- Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) I 153
- Multipoint Models for the Kinematic and Dynamic Analysis of Gear Power Transmissions (78-DET-89) MD 258
- Natural Evaporation of Sodium with Mist Formation—Part I—Measurement of Evaporation Rates and Comparison of Values against Theoretical Predictions HT 306
- A New Interpretation for the Dynamic Phenomena Associated with Geneva Mechanisms (78-DET-38) MD 63
- A Numerical Study of Three-Dimensional Roll Cells within Rigid Boundaries HT 233
- Orthotropic Cylindrical Shells Under Dynamic Loading (78-WA/DE-21) MD 322
- Propagation of Inlet Flow Distortions through an Axial Compressor Stage (78-GT-34) P 116
- Solution of Anisotropic Problems of First Class by Coordinate-Transformation HT 340
- The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) HT 193
- Structure of Turbulent Velocity and Temperature Fluctuations in Fully Developed Pipe Flow HT 15
- A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio MD 274
- Time-Domain Structural Response Simulation in a Short-Crested Sea ERT 270
- Torque Characteristics for Spherical Annulus Flow F 284
- Trajectories of Single and Double Jets Injected into a Crossflow of Arbitrary Velocity Distribution F 217
- Two-Dimensional Laminar Flow in Elbows F 278
- Upper Limit of CHF in the Saturated Forced Convection Boiling on a Heated Disk with a Small Impinging Jet HT 265
- Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) P 343
- Venkatachala, B. J.** Finite-Difference Solution of Free Convection Problem with Non-uniform Gravity (TN) HT 745
- Ventilated Space**  
The Reversed Brayton Cycle Heat Pump—A Natural Open Cycle for HVAC Applications (78-GT-60) P 162
- Vermes, G.** Thermophoresis—Enhanced Deposition Rates in Combustion Turbine Blade Passages (78-WA/GT-1) P 542; (D) P 546; (AC) P 547

## Vertical Cones

Over-All Heat Transfer from Vertical Cones in Laminar Free Convection: An Approximate Method (TN) **HT 174**

## Vertical Fine

Condensation on an Extended Surface **HT 434**

## Vertical Ice Surface

Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water **HT 313**

## Vertical Plates

Effects of Mass Transfer and Free-Convection Currents on the Flow Past an Impulsively Started Vertical Plate **AM 757**

## Vertical Stores Handling Conveyor

Preliminary Design, Vertical Stores Handling Conveyor (GR) **MD 368**

## Vertical Support Members

Thermal Performance Verification of Thermal Vertical Support Members for the Trans-Alaska Pipeline (77-WA/HT-34) **ERT 225**

## Vessel Design

Stability Design Criterion for Vessels Subjected to Concurrent External Pressure and Longitudinal Compressive Loads (TB) **PVT 178**

## Vessels

Entrainment by a Jet at a Density Interface in a Thermally Stratified Vessel (77-HT-23) **HT 338**

## Vibrating Cascades

A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) **P 431**

## Vibrating Systems

A Closed-Form Numerical Algorithm for the Periodic Response of High-Speed Elastic Linkages (78-DET-15) **MD 154**

A Computationally Efficient Numerical Algorithm for the Transient Response of High-Speed Elastic Linkages (78-DET-54) **MD 138**

## Vibration Absorption

The Horizontal "Gate" Filter as a Torsional Vibration System With Absorption (77-DET-86) **MD 163**

## Vibration Controller

A Feedback Vibration Controller for Circular Saws **DS 44**

## Vibration Effects

An Analysis of Effects of Electromechanical Vibration on Selected Specimens (GR) **MD 175**

## Vibration Frequencies

Vibration Frequencies of a Twisted Uniform Blade with One End Spring Hinged and the Other Free (TB) **P 679**

## Vibration Isolation

Principles and Criteria of Vibration Isolation of Machinery **MD 682**

## Vibration Isolators

A State Space Method for Optimal Design of Vibration Isolators **MD 309**

## Vibration Physics

The Physics of Vibration: Part 1—The Simple Classical Vibrator (BR) **AM 986**

## Vibrations

Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring **AM 156** (D) (AC) **AM 963**

Amplitude-Frequency Characteristics of Large-Amplitude Vibrations of Sandwich Plates (BN) **AM 330**

Analysis of Roller/Ball Bearing Vibrations (77-WA/DE-5) **MD 118**

Analysis of Roller/Ball Vibrations (D) (AC) **MD 519**

Axisymmetric Flexural Vibrations of a Thick Free Circular Plate **AM 139**

Axisymmetric Torsional Vibration of Conical Shells (BN) **AM 699**

Bond Graphs for Flexible Multibody Systems (78-WA/DSC-1) **DS 58**

Clamped Beam Parametric Amplifier (79-APM-9) **AM 157**

Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 448** (D) **P 448** (AC) **P 449**

Dynamic Response of a Membrane With Both Curved and Straight Line Boundaries **AM 667**

Eigenoscillations for Coupled Thermoelastic Vibrations of Timoshenko Beams **AM 168**

The Elastic-Dynamic Behavior of a Counterweighted Rocker Link with an Overhanging Endmass in a Four-Bar Linkage Part I: Theory (78-DET-23) **MD 77**

Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**

Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) **MD 133**

Flow Induced Vibration (BR) **MD 6**

The Lanchester Damper—A Design Procedure for Optimizing the Damping Ratio for a Cylindrical Slug Damper Fitted to a Machine Element (78-WA/DE-5) **MD 291**

Linearization Equations for Vibration Induced by Oscillatory Flow (BN) **AM 948**

Marine Riser Vibration Response Determined by Modal Analysis (78-Pet-12) **ERT 159**

Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**

Modeling Hydroelastic Vibrations (BR) **AM 237**

Nonlinear Vibration of Rectangular Plates (BN) **AM 215**

Pressure Instrumentation for Gas Turbine Engines—a Review of Measurement Technology (78-GT-148) **P 373**

Resonant Excitation of a Spinning, Nutating Plate **AM 132**

Rolling Element Bearing Vibration Transfer Characteristics: Effect of Stiffness **AM 677**

On The Torsional Vibration of Branched Systems Using Extended Transfer Matrix Method (77-WA/DE-4) **MD 546**

USS Oliver Hazard Perry (FFG-7) Guided Missile Frigate Propulsion System Land Based Test Site Operational Experience (78-GT-150) **P 387** (D) **P 404**

Vibration of Beams Carrying Discrete Dampers and Masses **MD 317**

Vibrations and Stability of Multiple Parameter Systems (BR) **AM 719**

Viet, L. Use of Electrochemical Methods for the Study of Mass Transfer and Drag Reduction in Polymer Solutions Close to a Wall **F 121**

Vilman, C. Fracture Related to a Dislocation Distribution (79-WA/APM-26) **AM 817**

Vinson, C. A. Geometric Modeling of the Human Left Ventricle (TB) **BE 221**

Virkler, D. A. The Statistical Nature of Fatigue Crack Propagation **MT 148**

Viskanta, R. Latent Heat-of-Fusion Energy Storage: Experiments on Heat Transfer from Cylinders During Melting (78-HT-47) **HT 453**

Viswanadham, N. Robust Multivariable Controllers for a Tubular Ammonia Reactor **DS 290**

## Viscoelastic Body

The Propagation of a Crack by a Rigid Wedge in an Infinite Power Law Viscoelastic Body (79-WA/APM-10) **AM 605**

## Viscoelastic Fluid

An Analysis of the Flow of a Viscoelastic Fluid Between Arbitrary Two-Dimensional Surfaces Subject to Normal High Frequency Oscillations (78-Lub-5) **L 145** (D) **L 152** (AC) **L 153**

Fluctuating Flow of a Viscoelastic Fluid in a Porous Channel **AM 21**

## Viscoelastic Pipes

An Investigation of Pressure Transients in Viscoelastic Pipes (79-WA/FE-10) **F 485**

## Viscoelastic Structural Members

Transient Response of Continuous Viscoelastic Structural Members **AM 685**

## Viscoelasticity

Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**

Residual Thermal Stresses Due to Cool-Down of Epoxy-Resin Composites (79-WA/APM-9) **AM 563**

## Viscoplastic Formulations

Analytical Formulation of a Rate and Temperature Dependent Stress-Strain Relation **MT 254**

## Viscoplasticity

Viscoplasticity Based on Total Strain. The Modeling of Creep With Special Considerations of Initial Strain and Aging **MT 380**

## Viscosity

Atomization of Crude and Residual Fuel Oils (78-GT-83) **P 258**

Effect of Geometry on Hydrodynamic Film Thickness (78-Lub-24) **L 231** (D) **L 238** (AC) **L 239**

Elastic Connecting-Rod Bearing With Piezoviscous Lubricant: Analysis of the Steady-State Characteristics (78-Lub-6) **L 190** (D) **L 198** (AC) **L 200**

Factors Influencing Power Loss of Tilting-Pad Thrust Bearings (78-Lub-22) **L 154** (D) **L 161** (AC) **L 162**

Fluid-Film Flows of Differential Fluids of Complexity  $n$  Dimensional Approach—Applications to Lubrication Theory **L 140**

The Hydrodynamic Stability of Two Viscous Incompressible Fluids in Parallel Uniform Shearing Motion (79-APM-26) **AM 499**

Stability of Shock Waves of Arbitrary Strength With Viscosity

and Heat Conduction (79-APM-27) **AM 505**

Theoretical and Experimental Determination of the Dynamic Characteristics of a Hydrodynamic Journal Bearing (78-Lub-4) **L 129** (D) **L 137** (AC) **L 138**

Viscosity of Nitrogen near the Critical Point (78-WA/HT-38) **HT 3**

## Viscous Boundary Layer

Boundary-Layer Growth in Three Dimensions With Aligned Magnetic Field (BN) **AM 226**

## Viscous Flow

Analysis of Fully Developed Unsteady Viscous Flow in a Curved Elastic Tube Model to Provide Fluid Mechanical Data for Some Circulatory Path-Physiological Situations and Assist Devices (78-WA/Bio-1) **BE 114**

A Calculation Method for Incompressible Viscous, Blade-to-Blade Flow through Radial Turbomachines with Log-Spiral Blade Surfaces (78-GT-195) **P 458**

A Calculation Procedure for Three-Dimensional, Viscous, Compressible Duct Flow. Part II—Stagnation Pressure Losses in a Rectangular Elbow (79-WA/FE-5) **F 423** (D) (AC) **F 428**

## Viscous Fluids

Lubrication With Micropolar Liquids and Its Application to Short Bearings **L 358**

Peristaltic Pumping by a Lateral Bending Wave **BE 239**

Stability of a Rotor Partially Filled With a Viscous Incompressible Fluid (79-WA/APM-28) **AM 913**

## Viscous-Inviscid Interaction

Prediction of Incompressible Separated Boundary Layers Including Viscous-Inviscid Interaction **F 466**

Vogel, E. A. Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 20**

## Void Fraction Measurement

Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**

## Volumetric Displacement

Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 448**

## Volumetric Energy Sources

Onset of Convection in Fluid Layers with Non-uniform Volumetric Energy Sources (79-HT-100) **HT 698**

Vorres, K. S. Effect of Composition on Melting Behavior of Coal Ash (78-WA/CD-2) **P 487**

## Vortex Formation

On the Nature of Jets Entering a Turbulent Flow Part A—Jet-Mainstream Interaction **P 459**; Part B—Film Cooling Performance **P 466**

## Vortex Instability

Vortex Instability in Buoyancy-Induced Flow over Inclined Heated Surfaces in Porous Media **HT 660**

## Vortex Model

A Vortex Model of the Darrieus Turbine: An Analytical and Experimental Study (79-WA/FE-6) **F 500**

## Vortex Shedding

Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) **AM 672**

## Vortex Tube

Experimental Study of Two-Phase Propane Expanded through the Ranque-Hilsch Tube **HT 300**

## Vortices

Measurements Within Görtler Vortices **F 517**

Vukobratović, M. Contribution to Computer Construction of Active Chain Models Via Lagrangian Form **AM 101**; Simulation and Control Synthesis of Manipulator in Assembling Technical Parts **DS 332**

Vyas, B. D. Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water **HT 313**

## W

Wachtel, G. P. Thermophoresis—Enhanced Deposition Rates in Combustion Turbine Blade Passages (D) **P 548** (AC) **P 547**

Waddell, J. D. Maintenance Assessment for Advanced Nuclear Power Plants (78-WA/NE-1) **P 640**

Wagner, J. H. Periodically Unsteady Flow in an Imbedded Stage of a Multistage, Axial-Flow Turbomachine (78-GT-6) **P 42**

Waked, A. M. Torque Characteristics for Spherical Annulus Flow **F 284**

Waldron, K. J. Elimination of Branch, Grashof, and Order Defects in Path-Angle Generation and Function Generation Synthesis (78-DET-16) **MD 428**; Joint Displacements in Linkage Synthesis Solutions

- (78-DET-43) MD 477  
**Walker, R. D.** (author) Mode of Failure Investigations of Helicopter Transmissions (GR) MD 176
- Wall Channels**  
 Heat Transfer and Fluid Flow Analysis of Interrupted-Wall Channels, with Application to Heat Exchangers (D) HT 188; (AC) HT 189
- Wall Cooling**  
 Gas Turbine Combustor Cooling by Augmented Backside Convection (78-GT-33) P 109
- Wall Deformation**  
 Nonlinear Stability Analysis of a Two-Dimensional Model of an Elastic Tube Conveying a Compressible Flow (78-WA/APM-25) AM 31
- Wall Diffuseness**  
 Evaluation of Intergrating Sphere Surfaces for Infrared Pyrometers (TN) HT 379
- Wall Diffusers**  
 Griffith Diffusers F 473
- Wall-Flow-Direction Probe**  
 A Wall-Flow-Direction Probe for Use in Separating and Reattaching Flows F 364
- Wall Friction Loss**  
 Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) P 337
- Wall Heat Flux**  
 Radiative and Convective Transfer for Real Gas Flow through a Tube with Specified Wall Heat Flux (TN) HT 378
- Wall Measurements**  
 Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes HT 270
- Wall Pressure Fluctuations**  
 Spectral and Temporal Characteristics of Post-Stenotic Turbulent Wall Pressure Fluctuations BE 89
- Wall Pressures**  
 Annular Diffuser Performance for an Automotive Gas Turbine (78-GT-147) P 358
- Wall Shear Stress**  
 Experimental Investigation of Flow Resistance and Wall Shear Stress in the Interior Subchannel of a Triangular Array of Parallel Rods F 429; (D) F 434; (AC) F 435
- Wall Stress**  
 Contractile Filament Stress in the Left Ventricle and its Relationship to Wall Stress BE 225
- Wall Surface**  
 Experimental Study on Diffusers for Mixed-Flow Machines (78-GT-120) P 281
- Wall Temperature**  
 The Structure of a Boundary Layer on a Rough Wall with Blowing and Heat Transfer (78-HT-3) HT 193
- Wall Temperature**  
 On the Mechanism of Liquid Drop Deposition in Two-Phase Dispersed Flow HT 286
- Wall Temperature**  
 On the Nature of Jets Entering a Turbulent Flow Part B—Film Cooling Performance P 466
- Wall Temperature**  
 Structure of a Turbulent Thermal Plume Rising along an Isothermal Wall (78-HT-24) HT 249
- Wall Temperature Value**  
 Computations of Three-Dimensional Gas-Turbine Combustion Chamber Flows (78-GT-142) P 326
- Wall Thickness**  
 An Analytical Study of Starved Porous Bearings L 38
- Wallace, F. J.** Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) P 440; (D) P 448; (AC) P 449
- Wallis, G. B.** Fillet Size in a Liquid Jet (D) F 108; An Isentropic Streamtube Model for Flashing Two-Phase Vapor-Liquid Flow (ER) HT 375
- Wallis, J. R.** Fatigue Analysis of Offshore Structures ERT 218
- Wallischeck, K.** (author) Preliminary Design Study of an Integrated Tail Rotor Servo Power Module (GR) MD 358
- Wallrich, M.** Kinematic and Kinetic Analysis of the Human Wrist by Stereoscopic Instrumentation (78-WA/Bio-3) BE 124
- Walton, J. R.** The Propagation of a Crack by a Rigid Wedge in an Infinite Power Law Viscoelastic Body (79-WA/APM-10) AM 605
- Wang, H. T.** Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) MT 34; Techniques for Efficient Time-Domain Analysis of Complete Buoy-Cable Systems (78-WA/OCE-6) I 418
- Wang, L. R.-L.** Seismic Response Behavior of Buried Pipelines (78-WA/PVP-5) PVT 21
- Wang, S. S.** Interlaminar Crack Growth in Fiber Reinforced Composites During Fatigue (78-WA/Mat-5) MT 34
- Wartanabe, I.** Effects of Fluid Leakage on Performance of a Centrifugal Compressor (78-GT-143) P 337; Stabilizing and Destabilizing Effects of Coriolis Force on Two-Dimensional Laminar and Turbulent Boundary Layers (78-GT-1) P 23; (D) P 29; (AC) P 30
- Warehouses**  
 Automated Optimum Design of Refrigerated Warehouses (78-WA/DE-11) MD 633
- Wareing, J.** Stable and Unstable Fatigue Crack Propagation During High Temperature Creep-Fatigue in Austenitic Steels: The Role of Precipitation MT 275
- Warm Prestress**  
 Investigation of Warm Prestress for the Case of Small  $\Delta T$  During a Reactor Loss-of-Coolant Accident (79-PVP-62) PVT 298
- Warner, R. E.** Air Model Tests of Labyrinth Seal Forces on a Whirling Rotor (D) (AC) P 212
- Warpinski, N. R.** Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) AM 483
- Warren, J. H.** Model for the Transfer of Polymer to Rough, Hard Surfaces (D) (AC) L 218
- Warship Propulsion**  
 Marine Spray—SM1A Propulsion Module (78-GT-58) P 149
- Warwick, D. N.** Mechanical Properties of Human Lumbar Spine Motion Segments—Part 1: Responses in Flexion, Extension, Lateral Bending, and Torsion BE 46
- Warzee, G.** An Integrated Quasi-3D Finite Element Calculation Program for Turbomachinery Flows (78-GT-56) P 141
- Wassel, A. T.** Calculation of Variable Property Turbulent Friction and Heat Transfer in Rough Pipes HT 469
- Waste Heat Recovery**  
 Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) P 217
- Waste Heat Recovery**  
 An Efficient, Flexible Arrangement to Generate High Quality Process or Domestic Heat in Recuperative Gas Cycle Power Plants—Application to Helium Direct Cycle Nuclear Power Plants (78-GT-55) P 130
- Waste Heat Release**  
 Potential Weather Modification Caused by Waste Heat Release from Large Dry Cooling Towers HT 164
- Waste Incineration**  
 The Economics of Energy Recovery From Industrial Waste Incineration ERT 269; (D) ERT 268; (AC) ERT 269
- Water**  
 Jet Pump Cavitation With Ambient and High Temperature Water F 93
- Water**  
 Velocity Profiles near a Vertical Ice Surface Melting into Fresh Water HT 313
- Water Boundary Layers**  
 Approximate Methods for Calculating Heated Water Laminar Boundary-Layer Properties (79-APM-?) AM 9
- Water Chemistry**  
 The Effect of Water Chemistry on the Reliability of Modern Large Steam Turbines (78-JPGC-Pwr-9) P 477
- Water Environment**  
 Fatigue Crack Growth Behavior of Four Structural Alloys in High Temperature High Purity Oxygenated Water (79-PVP-104) MT 191
- Water Films**  
 Heat Transfer Correlation for Subcooled Water Films on Horizontal Tubes (TN) HT 176
- Water Jets**  
 Effect of Nozzle Shape and Polymer Additives on Water Jet Appearance (77-FE-16) F 304
- Water Layers**  
 Free Convection Heat Transfer from Heated Cylinders Immersed in a Shallow Water Layer (TN) HT 741
- Water Mass Injection Rates**  
 Effects of Steam Injection on the Performance of Gas Turbine Power Cycles (78-GT-11) P 217
- Water Meters**  
 Dynamics of a Wobbling Symmetric Disk (BN) AM 711
- Water Pressure**  
 Characteristics of Transition Boiling in Sodium-Heated Steam Generator Tubes HT 270
- Water Production**  
 Water Production from Exhaust Gases of Steam Power Plants (TB) P 677
- Water Quenching**  
 Producing a Tough, High Strength Cast Steel Free of Temper Embrittlement MT 96
- Water Resources Development**  
 Modeling Hydroelastic Vibrations (BR) AM 237
- Water Tunnels**  
 Dynamics of Slender Tapered Beams With Internal or External Axial Flow—Part 2: Experiments (79-APM-4) AM 52
- Water Tunnel Visualizations of Dynamic Stall** F 376
- Water Turbines**  
 Compensation of the Speed Governor of a Water Turbine by the Method of Inequalities DS 205
- Water Vapor**  
 Fatigue Crack Growth in 214-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) MT 199
- Waterbox**  
 Velocity Distributions and Turbulence Intensities at Tube-sheets in a Two-Pass Condenser Model (78-JPGC-NE-6) P 490
- Waters, E. O.** The Application of ASME Code Case 1828 PVT 57
- Wave Diffraction**  
 Diffraction of SH-Waves by an Edge Crack AM 161
- Wave Equations**  
 Low Frequency Bloch Waves for Wave Equations Whose Speed is a Deterministic, or Randomlike, Periodic Function (D) (AC) AM 235
- Wave Loads**  
 Fatigue Analysis of Offshore Structures ERT 218
- Wave Motions**  
 Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (76-Pet-60) ERT 112
- Wave Numbers**  
 Accurate Nonlinear Equations and a Perturbation Solution for the Free Vibrations of a Circular Elastic Ring AM 155
- Wave Power**  
 Power Extraction From Ocean Surface Waves ERT 141
- Wave Propagation**  
 Harmonic Wave Propagation in a Periodically Layered Infinite Elastic Body: Plane Strain, Analytical Results AM 113
- Wave Propagation**  
 Propagation of Elastic Waves in Rods With Variable Cross Section (BN) AM 951
- Wave Solutions**  
 A Rational Analysis of Periodic Flow Perturbation in Supersonic Two-Dimensional Cascade (78-GT-176) P 431
- Wave Speeds**  
 Flexural Vibrations of Rotating Electromagnetic Shields (77-WA/DE-15) MD 133
- Waveforms**  
 Upper Bounds for Amplitudes of Harmonic Components of Excitation (BN) AM 716
- Wavefront Motions**  
 Acoustic Emission From a Brief Crack Propagation Event AM 107
- Waveguides**  
 The Theory of Elastic Waves and Waveguides (BR) AM 969
- Wavelength Hypothesis**  
 A General Theory for Laminar Lubrication With Reynolds Roughness L 8
- Wavelength Pattern**  
 Thermal and Hydrodynamic Phenomena Associated with Melting of a Horizontal Substrate Placed Beneath a Heavier Immiscible Liquid (78-WA/HT-44) HT 318
- Wavelengths**  
 Convective Heat Transfer Augmentation in Thermal Entrance Regions by Means of Thermal Instability HT 222
- Wave Prediction**  
 On Predicting Boiling Burnout with the Mechanical Energy Stability Criterion HT 276
- Waves**  
 Model Study of the Effect of a Reef on Ocean Waves (78-WA/OCE-3) I 153
- Wave Optimization**  
 Optimization of Power Absorption From Sea Waves ERT 145
- Wave Reflection**  
 Reflection and Transmission of Circularly Polarized Elastic Waves of Finite Amplitude (79-WA/APM-31) AM 667
- Wave Stress**  
 Waves From Suddenly Punched Hole in Plate Subjected to Uniaxial Tension Field (79-WA/APM-32) AM 673
- Wave Stress Measurements**  
 Semi-submersible Rig Motion Studies Offshore of Alaska and Southern California ERT 182
- Wave Surfaces**  
 Forced-Convection Heat Transfer from Irregular Melting Wavy Boundaries HT 606



## Wavy Surfaces

Thermoelastic Contact Between Bodies With a Wavy Surface (76-WA/APM-35) **AM 854**

Wayner, P. C., Jr. An Evaporating Ethanol Meniscus—Part I: Experimental Studies **HT 55**; Part II: Analytical Studies **HT 59**

## Weak Extinction Limits

Weak Extinction Limits of Turbulent Flowing Mixtures (78-GT-144) **P 343**

## Weakly Nonlinear Pendulum

On the Damped Oscillations of a Weakly Nonlinear Pendulum (BN) **AM 213**

## Weapon System

Propulsion Cycle and Configuration Commonality Considerations for Subsonic V/STOL Design (78-GT-88) **P 195**

## Wear

Abrasion of WC-Co Alloys by Quartz (78-Lub-19) **L 208**

Effect of Phosphorus on the Friction and Wear Characteristics of Cu-Sn-P Alloys (78-Lub-14) **L 201**; (D) **L 206**; (AC) **L 207**

Filtration Effects on Ball Bearing Life and Condition in a Contaminated Lubricant (78-Lub-34) **L 171**; (D) **L 177**; (AC) **L 178**

Fretting Wear of Heat Exchanger Tubes—Part I: Experiments (78-JPGC-NE-8) **P 625**; Part II: Models (78-JPGC-NE-9) **P 630**

Friction and Wear Characteristics of Bearing Materials Under Boundary Lubricated Conditions **L 474**

Friction and Wear of Sintered Cast Iron Products **L 54**

On the Measurement and Propagation of Flank Wear in Cutting Tools (78-WA/PROD-23) **I 109**

Multi-Tool Machining Analysis—Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

Reliability Analysis of Cutting Tools (78-WA/PROD-9) **I 185**

A Review of the National Conference on Industrial Tribology Dehradun, India, March 7-9, 1979 (FR) **L 467**

Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) **I 217**

A Study on Hourglass Worm Gearing with Constant Side-Roll Ratio **MD 274**

Wear: Treatise on Material Science and Technology (BR) **AM 958**

## Wear Coefficient

Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**

## Wear Life

Wear and Thermal Processes in Asbestos-Reinforced Friction Materials **L 481**

## Wear Mechanisms

Frictional Wear Mechanisms (GR) **MD 308**

## Wear Rate

Experimental Studies of Tube Frettings in Steam Generators and Heat Exchangers **PVT 125**

## Weather Modification

Potential Weather Modification Caused by Waste Heat Release from Large Dry Cooling Towers **HT 164**

Weathering, P. F. The Reliability of Gas Turbine Powered Compressor Units (78-GT-27) **P 73**

## Weave Rooms

Mathematical Modeling of Textile Weave Room Sound Propagation (78-Tex-3) **I 89**

## Web Systems

An Elastic Analysis of Multiloop Endless Web Systems **DS 306**

Webb, R. L. A Generalized Procedure for the Design and Optimization of Fluted Gregging Condensing Surfaces **HT 325**

Webster, B. T. A Vortex Model of the Darrieus Turbine: An Analytical and Experimental Study (79-WA/FE-6) **F 500**

Wechsler, M. S. The Influence of Impurity-Defect Interactions on Radiation Hardening and Embrittlement **MT 114**

## Wedge Indentation

Effects of Strain Hardening on Rock/Bit-Tooth Interaction (77-Pet-70) **ERT 53**

## Wedge-Shaped Stamp

The Singularity at the Apex of a Bonded Wedge-Shaped Stamp (79-APM-32) **AM 577**

## Wedges

Base Pressure Associated With Incompressible Flow Past Wedges at High Reynolds Numbers (79-APM-31) **AM 483**

The Propagation of a Crack by a Rigid Wedge in an Infinite

Power Law Viscoelastic Body (79-WA/APM-10) **AM 505**

## Weeks Island Dome Salt Mine

National Strategic Crude Oil Storage in the Weeks Island Dome Salt Mine—Part I: Geotechnical Evaluation (78-Pet-75) **ERT 82**; Part II: Rock Mechanics Evaluation (78-Pet-64) **ERT 87**

Wei, R. P. Fatigue Crack Growth in 214-Cr-1Mo Steel Exposed to Hydrogen Containing Gases (79-PVP-102) **MT 199**

Weidinger, P. Dynamic Seismic Analysis of Long Segmented Lintels (78-WA/PVP-4) **PVT 10**

Welsh, D. Performance of Spherical Gas Bearings in Axisymmetric Operation (TB) **L 240**

Wellsman, V. Residual Thermal Stresses Due to Cool-Down of Epoxy-Resin Composites (79-WA/APM-9) **AM 583**

## Welding

Cold Pressure Welding—The Mechanisms Governing Bonding (78-WA/PROD-4) **I 121**

## Weldments

Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

## Welds

Computation of Residual Stresses due to Multipass Welds in Pipe Systems (78-PVP-104) **PVT 149**

## Well Casing

Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 20**

## Well Pressure Distribution

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**

## Wells

Effect of a Heat-Conducting Well Casing on Temperature Distribution in an Observation Well **ERT 20**

Weng, G. J. A Physically Consistent Method for the Prediction of Creep Behavior of Metals (79-WA/APM-24) **AM 800**

Wepfer, W. J. Economic Sizing of Steam Piping and Insulation (78-WA/Enr-9) **I 427**

Wesley, D. A. Thin Disk On a Convectively Cooled Plate—Application to Heat Flux Measurement Errors **HT 346**

West, J. B. Constitutive Equation of Lung Tissue Elasticity **BE 38**

## Wheel Design

Application of Finite Element Method in the Development of Improved Railroad Car Wheel Designs (78-WA/RT-5) **I 378**

## Wheel Profiles

Lateral Stability of Freight Cars With Axles Having Different Wheel Profiles and Asymmetric Loading (78-RT-3) **I 1**

## Wheel Topography

Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 165**

## Wheels

An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**

Use of Fracture Mechanics Methods for Establishing Inspection Level for Turbine Wheels **MT 75**

## Wheelset Forces

Nonlinear Wheelset Forces in Flange Contact—Part 1: Steady State Analysis and Numerical Results **DS 238**; Part 2: Measurements Using Dynamically Scaled Models **DS 247**

Whicker, D. Elastohydrodynamic Squeeze Films: Effects of Viscoelasticity and Fluctuating Load (78-Lub-20) **L 74**

White, M. F. Rolling Element Bearing Vibration Transfer Characteristics: Effect of Stiffness **AM 677**

## Whirl

Rub-Induced Parametric Excitation in Rotors (78-WA/DE-14) **MD 440**

## Whirl Orbit

Flow in a Whirling Rotor Bearing **AM 767**

## Whirl Stability

Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**

## Whirling Instability

A Note on the Phase Relationships Involved in the Whirling Instability in Tube Arrays (D) **F 530**

## Whirling Rotor

Air Model Tests of Labyrinth Seal Forces on a Whirling Rotor

(D) (AC) **P 212**

## White Light Fringe Image Velocimeter (WVIF)

Laminar Fluid Flow Measurements Employing a White Light Fringe Image Velocimeter (WVIF) (BN) **AM 218**

White, F. M. (editorial) **F 154**; Editorial **F 298**; Editorial Opinions (ED) **F 410**

Whitaker, J. H. The Influence of Geometric Asymmetry on the Flow Downstream of Row of Jets Discharging Normally into a Free Stream (TN) **HT 183**; Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**; Velocity Characteristics of a Confined Coaxial Jet (79-WA/FE-9) **F 521**

Whitfield, A. Computer Aided Design of Mixed Flow Turbines for Turbochargers (78-GT-191) **P 440**; (D) **P 488**; (AC) **P 449**

Whitney, D. E. Discrete Parts Assembly Automation—an Overview (78-WA/DSC-11) **DS 6**

Wickens, A. H. Steering and Stability of Unsymmetric Articulated Railway Vehicles **DS 256**

Widner, G. E. O. Layered Cylindrical Pressure Vessels (78-PVP-103) **PVT 80**

Wieland, J. A. Selected Ordinates for Total Solar Radiant Property Evaluation from Spectral Data **HT 101**

Wierzbicki, T. Membrane Mode Solutions for Impulsively Loaded Circular Plates (79-APM-1) **AM 58**

Wiesner, F. J. A New Appraisal of Reynolds Number Effects on Centrifugal Compressor Performance (78-GT-149) **P 384**; (D) **P 392-394**; (AC) **P 395**

Wiggert, D. C. The Effect of Gaseous Cavitation on Fluid Transients **F 79**

Wilcock, D. F. Elastohydrodynamics and Related Topics (Fifth Leeds - Lyon Symposium on Tribology) (FR) **L 398**

Wide, D. J. Global Non-Iterative Design Optimization Using Monotonicity Analysis (78-WA/DE-17) **MD 645**

Wildheim, S. J. Excitation of Rotationally Periodic Structures (79-WA/APM-23) **AM 678**

Wilgen, F. J. Effects of Disk Flexibility on Shaft Whirl Stability (78-WA/DE-4) **MD 298**

Wilkinson, T. S. A Note on the Phase Relationships Involved in the Whirling Instability in Tube Arrays (D) **F 530**

Willard, W. A. (author) Mechanical Failure—Definition of the Problem (GR) **MD 175**

Williams, J. J. References Stress and Temperature for Nonisothermal Creep of Structures **AM 795**

Williams, R. J. Interactive Modeling and Analysis of Open or Closed Loop Dynamic Systems with Redundant Actuators (78-DET-42) **MD 407**

Wilmer, K. D. Mechanism Optimization via Optimality Criterion Techniques (78-DET-53) **MD 392**

Wilms, E. V. A Two-Degree-of-Freedom System With Coulomb Bearing Friction (BN) **AM 217**

Wilson, A. D. Fatigue Crack Propagation in A533B Steels—Metallographic and Fractographic Analyses **PVT 155**; The Influence of Inclusions on the Toughness and Fatigue Properties of A516-70 Steel **MT 265**

Wilson, D. E. Peristaltic Pumping by a Lateral Bending Wave **BE 239**

Wilson, E. M. The Relative Value of Energy Derived From Municipal Refuse (D) **ERT 257**; (AC) **ERT 259**

Wilson, J. R. (author) Collection of Methods for Reliability and Safety Engineering (GR) **MD 175**

Wilson, N. W. Velocity Profiles Near a Vertical Ice Surface Melting into Fresh Water **HT 313**

## Wind Loading Problem

Domains of Stability in a Wind-Induced Oscillation Problem (79-APM-28) **AM 672**

## Wind-Powered Electric Generation Systems

An Economic Evaluation of Small-Scale Wind-Powered Electric Generation Systems (78-WA/Enr-1) **P 213**

## Wind Tunnel Systems

Powerplant Integration—the Application of Current Experience to Future Developments (78-GT-113) **P 259**

## Wind Tunnels

A Comparison of Correction Methods Used in the Evaluation of Drag Coefficient Measurements for Two-Dimensional Rectangular Cylinders (79-WA/FE-3) **F 508**

Effect of Finite Width on Heat Transfer and Fluid Flow about an Inclined Rectangular Plate **HT 199**

Experimental Study of a Jet-Driven Helmholtz Oscillator (78-WA/FE-16) **F 383**

## Wind Velocity

Time-Domain Structural Response Simulation in a Short-Circuited Sea **JERT 270**



**Winget, J. M.** On the Dynamics of a Weighted Bowing Ball (79-WA/APM-17) **AM 937**

**Winglets**  
Two-Dimensional Dynamics of Tracked Ram Air Cushion Vehicles With Fixed and Variable Winglets (79-WA/DSC-11) **DS 321**

**Winer, W. O.** A Rheological Model for Elastohydrodynamic Contacts Based on Primary Laboratory Data (78-Lub-9) **L 258**; (D) **L 264, 265**; (AC) **L 265**; Shear Strength Measurements of Lubricants at High Pressure (78-Lub-8) **L 251**; (D) (AC) **L 257**

**Winkler Foundation**  
A Steadily Moving Load on an Elastic Beam Resting on a Tensionless Winkler Foundation (79-APM-11) **AM 175**

**Winoto, S. H.** Measurements Within Görtler Vortices **F 517**

**Wire, G. L.** Techniques Developed for Elevated Temperature Fracture Toughness Testing of Irradiated Materials in Thin Sections **MT 403**

**Wire Ropes**  
Contact Problems in Wire Ropes (79-DE-2) **MD 702**

**Wire Wrapping**  
An Analysis of a Wire-Wrapped Mechanical Crack Arrestor for Pressurized Pipelines **PVT 51**

**Witt, C. L.** Velocity Measurements in Two Natural Convection Air Flows Using a Laser Velocimeter **HT 256**

**Wobble**  
Observation of Self-Excited Wobble in Face Seals (TB) **L 526**

**Wojcik, C. K.** Kinematics of an Epicyclic Gear Pump (78-DET-13) **MD 449**

**Wolosewicz, R. M.** (author) Appliance Safety by Design (GR) **MD 366**

**Wood**  
On the Strength Anisotropy of Bone and Wood (79-WA/APM-21) **AM 832**

**Wood, C. O.** An Evaluation of Velocity Probes for Measuring Non-Uniform Gas Flow in Large Ducts (78-WA/PTC-1) **P 655**

**Wood, J. H.** Creep Failure Criteria for High Temperature Alloys **MT 374**

**Wood, K. C.** Model for the Transfer of Polymer to Rough, Hard Surfaces (78-Lub-31) **L 212**; (D) (AC) **L 218**

**Woodford, D. A.** Creep Damage and the Remaining Life Concept **MT 311**

**Woods, R. L.** An Air-Modulated Fluidic Fuel-Injection System (78-WA/DSC-21) **DS 71**; Closed, Loop, Knock Adaptive Spark Timing Control Based on Cylinder Pressure (D) **DS 69**; (AC) **DS 70**; (reviewer) Introduction to Fluid Logic (BR) **DS 93**

**Workability**  
Ductile Fracture in Axisymmetric Extrusion and Drawing—Part 1: Deformation Mechanics of Extrusion and Drawing (78-Prod-A) **I 23**; Part 2: Workability in Extrusion and Drawing (78-Prod-B) **I 36**

**Working Cycles**  
Optimal Programming of Working Cycles for Industrial Robots **MD 250**

**Workpiece Failure**  
Multi-Tool Machining Analysis—Part 1 Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**

**Workpiece Materials**  
Some Aspects of Flat Surface Grinding with Intermittent Cross-Feed—Part I: A Wheel Wear Mechanism (78-WA/PROD-29) **I 135**; Part II: The Force Equilibrium **I 141**

**Workpiece Surface**  
An Investigation of Local Heat Transfer during Grinding Process—Effects of Porosity of Grinding Wheel (78-WA/PROD-5) **I 97**

**Workpieces**  
Construction of Three-Workpiece Lapping Process (78-WA/PROD-7) **I 255**

**Worm Gearing**  
A Study on Hourglass Worm Gearing with Constant Slide-Roll Ratio **MD 274**

**Wormley, D. N.** Controlled Dynamic Characteristics of Ferromagnetic Vehicle Suspensions Providing Simultaneous Life and Guidance **DS 217**

**Wray, R. N.** On the Motion of Rectangular Prismatic Bodies (79-FE-3) **F 193**

**Wright, J. P.** On Some General Properties of Combined Dynamical Systems (D) (AC) **AM 904**

**Wu, C. H.** Plane-Strain Buckling of a Crack in a Harmonic Solid Subjected to Crack-Parallel Compression

(78-WA/APM-4) **AM 507**

**Wu, E.-R.** Gas-Lubricated Porous Bearings of Finite Length—Self-Acting Journal Bearings (78-Lub-30) **L 338**; (D) (AC) **L 340**; (Er) **L 525**

**Wu, H.** An Analysis of Thermal Cracking of Carbide Tools in Intermittent Cutting (78-WA/PROD-22) **I 159**

**Wu, H. C.** Analysis of Misalignment in the Tension Test **MT 68**

**Wu, P. S.** Correlations for Natural Convection through High L/D Rectangular Cells (TN) **HT 741**

**Wu, S. M.** Characterization and Analysis of Grinding Wheel Topography as a Stochastic Isotropic Surface (79-PROD-E) **I 165**; Determination of True Cutting Signal by Separation of Instrumentation Dynamics From Measured Response (78-WA/PROD-16) **I 264**; A Mathematical Model for Drill Point Design and Grinding (78-WA/PROD-35) **I 333**; A Microprocessor Controlled Twist Drill Grinder for Automated Drill Production (78-WA/PROD-36) **I 205**

**Wyler, J. S.** Engineering Statistics—With Particular Reference to Performance Test Code Work (78-WA/PTC-2) **P 662**; Subsonic Turbulent Flow Past a Downstream Facing Annular Step (D) (AC) **F 236**

**Wyman, B. F.** Indirect Control of the Forces of Constraint in Dynamic Systems **DS 355**

**Y**

**Yaghoubi, M. A.** Free Convection Heat Transfer from Heated Cylinders Immersed in a Shallow Water Layer (TN) **HT 741**

**Yamada, Y.** Frictional Resistance of Enclosed Rotating Cones With Superposed Throughflow **F 259**

**Yamaguchi, K.** Static and Dynamic Analysis of Hydraulic Copying System Using Throttling Valve (78-WA/PROD-3) **I 295**

**Yamamoto, H.** Forced Convection Heat Transfer on Heated Bottom Surface of a Cavity **HT 475**

**Yamasaki, M.** Experimental Study of Flow in a Supersonic Centrifugal Impeller (78-GT-2) **P 33**; (D) **P 39**; (AC) **P 40**

**Yan, H. S.** Technology Transfer in the Design of Adjustable Linkages (78-DET-67) **MD 495**

**Yan, M. M.** Perturbation Solutions to Phase Change Problem Subject to Convection and Radiation (77-WA/HT-16) **HT 96**

**Yang, A. T.** Multistage Geared Geneva Mechanism (78-DET-18) **MD 41**

**Yang, C.-I.** Finite-Element Solution of Added Mass and Damping of Oscillation Rods in Viscous Fluids **AM 519**

**Yang, T.-L.** Griffith Diffusers **F 473**

**Yang, W.-C.** On the Flow Regimes of Downhole Flow of a Gas-Particle Mixture (D) **F 291**; (AC) **F 292**

**Yang, Wen-Jei** Laminar Transport Phenomena in Parallel Channels with a Short Flow Construction **HT 217**

**Yao, S.-C.** Convective Heat Transfer of Laminar Droplet Flow in Thermal Entrance Region of Circular Tubes **HT 480**; A Simple Method for Calculating Radiative Heat Transfer in Rod Bundles with Droplets and Vapor as Absorbing Media (TN) **HT 736**

**Yarns**  
Finite Biaxial Extension of Completely Set Plain Woven Fabrics **AM 651**

**Yen, T. F.** (editor) Biomaterials, Medical Devices, and Artificial Organs (BR) **MD 363**

**Yeh, L. Y.** A Variational Analysis of Freezing or Melting in a Finite Medium Subject to Radiation and Convection **HT 592**

**Yellam, A. L.** Geometric Modelling of the Human Left Ventricle (TB) **BE 221**

**Yew, C. H.** Estimation of the Mechanical Properties of Fluid-Saturated Rocks Using the Measured Wave Motions (78-Pet-60) **ERT 112**

**Yi, C. J.** Flight and Propulsion Control Integration for Selected In-Flight Thrust Vectoring Modes (78-GT-79) **P 168**

**Yianneakis, M.** Turbulent Flow Measurements by Laser-Doppler Anemometry in Motored Piston-Cylinder Assemblies (79-WA/FE-1) **F 208**

**Yield Criteria**  
An Interpolation Scheme for Plastic Yield Criteria (BN) **AM 701**

**Yield Strength**  
Producing a Tough, High Strength Cast Steel Free of

Temper Embrittlement **MT 98**

**Strengthening Mechanisms in High-Speed Steel as Related to Tool-Life (78-WA/PROD-15) I 217**

**Yield Surface Characteristics**  
Yield Surface Characteristics Arising from Orthorhombic Symmetry (BN) **AM 961**

**Yield Surfaces**  
Effect of Cyclic Loading on the Yield Surface **PVT 59**

**Yoder, G. R.** 50-Fold Difference in Region-II Fatigue Crack Propagation Resistance of Titanium Alloys: A Grain-Size Effect **MT 88**

**Yorushonlis, T.** Innovative Design of Ceramic Utility Gas Turbines (78-WA/GT-9) **P 556**; (D) **P 562**

**Yoshida, T.** Optimal Group Scheduling and Machining-Speed Decision Under Due-Date Constraints (78-WA/PROD-39) **I 128**

**Yoshimura, T.** An Adaptive Control Policy of Discrete-Time Linear Systems With Random Parameters (TB) **DS 361**

**Young, D. F.** Fluid Mechanics of Arterial Stenoses **BE 157**

**Young, W. C.** (author) Formulas for Stress and Strain—5th Edition (BR) **MD 173**

**Yttria-Stabilized Zirconium Oxide**  
Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 540**

**Yu, J. S.** On Laminar Dispersion for Flow Through Round Tubes (79-WA/APM-14) **AM 750**

**Yücel, A.** Onset of Convection in Fluid Layers with Non-uniform Volumetric Energy Sources (79-HT-100) **HT 866**

**Yuen, J. L.** Fatigue Crack Growth Behavior of Stainless Steel Type 316 Plate and 16-8-2 Weldments in Air and High-Carbon Liquid Sodium (79-PVP-105) **MT 214**

**Yuen, P.** Calibration of a Fast Neutron Scattering Technique for Measurement of Void Fraction in Rod Bundles **HT 295**

**Yuen, W. Y.** Contact Problems in Wire Ropes (79-DE-2) **MD 702**

**Yung, D.** A Note on Combined Boiling and Evaporation of Liquid Films on Horizontal Tubes (Er) **HT 375**

**Yung, K. M.** Optir: Analysis of Porous Metal Bearings (78-Lub-29) **L 99**

**Yuruzume, I.** Transmission Errors and Noise of Spur Gears Having Uneven Tooth Profile Errors (77-DET-51) **MD 288**

**Z**

**Zahalak, G. I.** A Quantitative Evaluation of the Frequency-Response Characteristics of Active Human Skeletal Muscle In Vivo **BE 26**

**Zajac, S.** Effect of Aortic Arch Atherosclerotic Formations on Blood Mass Flow Distribution **BE 96**

**Zakin, J. L.** Transport of Oils as Oil-in-Water Emulsions (77-FE-26) **F 100**

**Zaveri, F., Jr.** A Description of History Dependent Plastic Flow Behavior of Anisotropic Metals **MT 59**

**Zeeman, E. C.** (author) Catastrophe Theory: Selected Papers 1972-77 (BR) **AM 237**

**Zeluf, W. C.** A Study of the Influence of Reynolds Number on the Performance of Centrifugal Fans (78-WA/PTC-3) **P 670**

**Zero-Sum Differential Games**  
Parameter Optimization for Two-Player Zero-Sum Differential Games **DS 345**

**Ziebarth, H. K.** (author) Mechanical Component Failure Prognosis Study (GR) **MD 175**

**Ziegert, J. C.** The Effect of Soft Tissue on Measurements of Vibrational Bone Motion by Skin-Mounted Accelerometers **BE 218**

**Zien, H. M.** Verification of Specimens for Low-Cycle Fatigue and Cyclic Plasticity Testing **PVT 321**

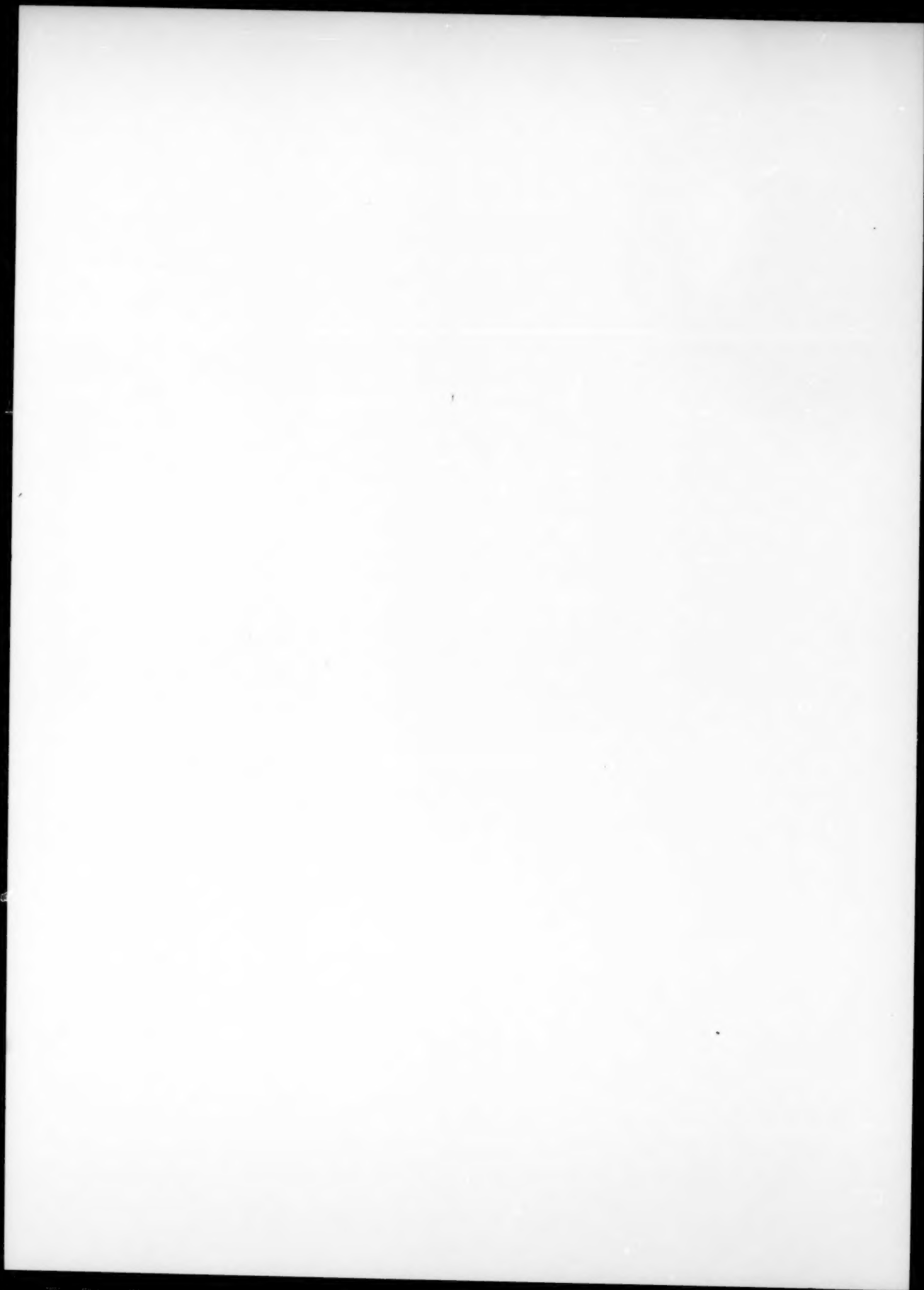
**Zirconium Oxide**  
Development of Sprayed Ceramic Seal System for Turbine Gas Path Sealing (78-WA/GT-7) **P 540**

**Zompi, A.** Multi-Tool Machining Analysis—Part 1 Tool Failure Patterns and Implications (78-WA/PROD-24) **I 230**; Part 2 Economic Evaluation in View of Tool Life Scatter (78-WA/PROD-25) **I 237**

**Zussman, F.** (author) AMSEC Users Guide (GR) **MD 174**

**Zvirin, Y.** The Transient and Stability Behavior of a Natural Convection Loop **HT 684**





1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100



